Peter
Ramanauskas/R5/USEPA/US
07/11/2005 03:32 PM

To "Guier, David R." <David.Guier@Lyondell.com>
cc Jim Moore <Jim.Moore@epa.state.il.us>
bcc
Subject RE: Tuscola Workplan

David,

Some additional feedback on the workplan/letter.

- Can you provide additional explanation on how TPH will be used to confirm "absence of impacts"?

- How will groundwater sampling be done? Low-flow techniques should be used. Your letter states that VOC samples will be placed in vials that contain a cap with sulfuric acid preservative solution . HCL is in parenthesis. We assume the sulfuric acid is a typo?

- Is there a figure available showing the locations of the new SRP 1 to SRP 5 wells? All new wells should be placed across the water table such that a check for DNAPL can be performed.

Peter

"Guier, David R." <David.Guier@Lyondell.com>

"Guier, David R."
<David.Guier@Lyondell.com
>
07/08/2005 02:49 PM

To
Subject RE: Tuscola Workplan

Peter:
The narrative section of the June work plan has been replaced by what I emailed earlier today. The figures from the June work plan, which is referenced in today's work plan, are attached. I think this is what you need. Thanks

David Guier
Remediation & Retained Liabilities Program Manager
Lyondell Chemical Company
One Houston Center, Suite 700
1221 McKinney Street
Houston, TX 77010
713-309-7794
david.guier@lyondell.com

-----Original Message-----
From: Ramanauskas.Peter@epamail.epa.gov
[mailto:Ramanauskas.Peter@epamail.epa.gov]
Sent: Friday, July 08, 2005 1:49 PM
To: Guier, David R.
Cc: Pontnack, Jason T.; jim.moore@epa.state.il.us
Subject: Re: Tuscola Workplan

Thanks, David.

I don't believe I ever received a copy of the June 2005 Comprehensive Site Investigation Workplan. Can you send me a copy (1 hardcopy and electronic (if available))?

Peter

"Guier, David R." <David.Guier@Lyondell.com>

07/08/2005 11:50 AM

To: jim.moore@epa.state.il.us, Peter Ramanauskas/R5/USEPA/US@EPA

cc: "Pontnack, Jason T." <Jason.Pontnack@Equistarchem.com>

Subject: Tuscola Workplan

Jim & Peter:
Attached is our workplan for the EI 750/SRP work at Equistar's Tuscola Plant. In order to try to meet the EI 750 deadline, we are starting the fieldwork next week. If you would like to come to the site, please contact our Site Environmental Engineer, Jason Pontnack, at (217) 253-1558. Please let me know if you have any questions, or need any additional information. I understand that any USEPA and/or IEPA comments will be combined, and come back via IEPA. Thank you.

David Guier
Remediation & Retained Liabilities Program Manager
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One Houston Center, Suite 700
1221 McKinney Street
Houston, TX 77010
713-309-7794
david.guier@lyondell.com

[attachment "TCO Workplan.pdf" deleted by Peter Ramanauskas/R5/USEPA/US] [attachment "1_Facility Layout.pdf" deleted by Peter Ramanauskas/R5/USEPA/US] [attachment "2_Former Ethylene Production Area.pdf" deleted by Peter Ramanauskas/R5/USEPA/US] [attachment "3_Former Polyethylene Production Area.pdf" deleted by Peter Ramanauskas/R5/USEPA/US] [attachment "4_Chemical Loading Area.pdf" deleted by Peter Ramanauskas/R5/USEPA/US] [attachment "5_Former Fractionation Process Area.pdf" deleted by Peter Ramanauskas/R5/USEPA/US] [attachment "6_Former Fire Training Area.pdf" deleted by Peter Ramanauskas/R5/USEPA/US] [attachment "7_Former Polymer Pilot Plant

Peter Ramanauskas/R5/USEPA/US

07/08/2005 03:54 PM

To

Subject Fw: Tuscola Workplan

Allen,

Here is the latest Equistar Tuscola, IL workplan. They are still operating under a voluntary agreement and are rushing out to the field Monday the 11th so that they can get us a CA750. I've asked them which lab they are using for analytical. This is a pretty skimpy plan and there is no formal QAPP at this time. But since this is voluntary, they can go out and do it, we'll just need to scrutinize things on the back end.

Anyway, let me know what you think when you have a moment.

I have the figures available electronically if you're interested in those at all.

Thanks,
Pete

----- Forwarded by Peter Ramanauskas/R5/USEPA/US on 07/08/2005 03:50 PM -----

"Guier, David R." <David.Guier@Lyondell.com>

07/08/2005 11:50 AM

To

Subject Tuscola Workplan

Jim & Peter:
Attached is our workplan for the EI 750/SRP work at Equistar's Tuscola Plant. In order to try to meet the EI 750 deadline, we are starting the fieldwork next week. If you would like to come to the site, please contact our Site Environmental Engineer, Jason Pontnack, at (217) 253-1558. Please let me know if you have any questions, or need any additional information. I understand that any USEPA and/or IEPA comments will be combined, and come back via IEPA. Thank you.

David Guier
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1221 McKinney Street
Houston, TX 77010
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david.guier@lyondell.com

TCO Workplan.pdf

EQUISTAR

Equistar Chemicals, LP
One Houston Center, Suite 1600
1221 McKinney Street
P.O. Box 2583
Houston, Texas 77252-2583
Phone: 713.309.7200

July 8, 2005

Mr. Peter Ramanauskas
United States Environmental Protection Agency
Corrective Action Section
77 West Jackson Boulevard (Mail Code: DW-8J)
Chicago, IL 60604-3590

Jim Moore, P.E.
Manager, Corrective Action Unit
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794

Re: Workplan for Additional Investigations
750 EI Demonstrations and Site Remediation Program
Equistar Chemicals, L.P
a.k.a. Millennium Petrochemicals, Inc.
Tuscola, Illinois
ILD 005 078 126

Dear Sirs:
Equistar Chemicals, LP (Equistar) has prepared this workplan for the further characterization of the soil to groundwater and groundwater pathways at our Tuscola Plant located at 625 East US Highway 36 in Tuscola, Douglas County, Illinois. The workplan has been prepared to obtain the information required to complete the 750 EI Demonstration and to satisfy the Illinois Site Remediation Program (SRP) data requirements. The workplan data objectives are the characterization of the groundwater pathway at the eleven (11) RCRA Areas of Concern (AOCs). Equistar understands that additional activities will be required through the Illinois SRP at the "Closed Wastewater Ponds" and "MW03 Area". In addition, Equistar will begin development of a groundwater monitoring program for the "Active Wastewater Treatment Ponds" through the Illinois EPA Bureau of Water beginning in 4th Quarter 2005.

To obtain the information required to complete the 750 EI demonstrations by September 30, 2005, Equistar will start the field investigations outlined below on July 11, 2005. Equistar's goal is to submit a SRP Comprehensive Site Investigation Report (CSIR) on or before September 16, 2005. The CSIR will include:

- Summary of the environmental history of Tuscola;
- Summary of all investigations completed at Tuscola;

- Discussion of Solid Waste Managements Units and current regulatory status, including the 750 EI;
- Existing site conditions;
- Investigations procedures;
- Groundwater monitoring procedures;
- Results
    - Site geology
    - Hydrogeology
    - Contaminant in soil
    - Groundwater quality
    - Groundwater/surface water receptor characterization;
- 750 EI Demonstration;
- TACO Tier 1 and 2 remediation objectives evaluations; and,
- Conclusions/Recommendations for additional investigations and/or SRP remediation action plan.

Equistar understands that additional investigations may be required based on the results of July 2005 investigations.

Environ's draft "Comprehensive Site Investigation Evaluation Report" (June 2005) serves as the background for this workplan. This workplan is expands that scope of work. Illinois SRP and Tiered Approach to Corrective Objectives (TACO) regulatory and data requirements, as well as approved methods, will be used in this investigation.

Scope of Workplan

Note: Figures referenced below were provided in Environ's draft "Comprehensive Site Investigation Workplan" (June 2005).

Site Characterization Monitoring Wells (Nine)

Five groundwater, monitoring wells (SRP 1 to SRP 5) will be installed downgradient (west) and lateral gradient (south) of the 11 AOCs. These wells will be installed across the water table and sampled for volatile organic compounds (VOCs). VOC data from five groundwater, monitoring wells (MW09, G125, G110, R113, and G111) from the closed landfill groundwater monitoring network will also be used to characterize conditions to the north, south and east of the 11 AOCs. Five soil samples will be obtained from the SRP wells for characterization of the site-specific organic carbon concentrations. These samples will also be analyzed for Total Petroleum Hydrocarbon [TPH: gas, diesel, and oil range] to confirm absence of impacts. These data will be used for the Tier 2 evaluations. Select wells will be "slug" tested to confirm the site-specific hydraulic conductivity.

RCRA AOC 1: Former Ethylene Production Area (ET)

Additional investigation is required to delineate the extent of benzene near ET11 and ET03. Two soil borings and two monitoring well will be advanced/installed.

Soil and groundwater samples will be analyzed for VOCs. Figure 2 provides locations of the borings and wells. One of the SRP wells will be installed downgradient (west) of this area.

RCRA AOC 2: Former Polyethylene Production Area
Additional investigation is required to confirm absence of "free" product near boring PE13. A monitoring well will be installed near PE13. The groundwater sample will be analyzed for VOCs. Figure 3 provides the well location.

RCRA AOC 3: Chemical Loading Area (CL)
Additional investigation is required to delineate the extent of benzene near CL04 and CL11. Three soil borings and two monitoring well will be advanced/installed. Soil and groundwater samples near CL04 will be analyzed for VOCs. Groundwater samples from the well near CL11 will be analyzed for lead, chromium and selenium. Figure 4 provides locations of the borings and wells.

RCRA AOC 4: Former Extraction Process Area (EX)
Additional investigation is not required for this area. One of the SRP wells will be installed downgradient of this area. One of the SRP wells will be installed downgradient (south) of this area.

RCRA AOC 5: Former Fractionation Process Area (FP)
Additional investigation is required to delineate the extent of benzene and PAHs downgradient of FP08, FP09 and FP13. One monitoring well will be installed downgradient of these borings. Groundwater sample will be analyzed for VOCs and PAHs. Figure 5 provides the well location.

RCRA AOC 6: Former Agricultural Chemical Area (AG)
Additional investigation is not required for this area. The AOC is located between Landfill Areas 6/7 and Area 1. The closed landfill monitoring well network has adequately defined the extent of the sulfate in groundwater.

RCRA AOC 7: Former Fire Training Area (FT)
Additional investigation is required to delineate the extent of VOCs in boring FT06. One monitoring well will be installed downgradient of FT06. The groundwater sample will be analyzed for VOCs. Figure 6 provides the well location.

RCRA AOC 8: Former Polymer Pilot Plant Area (PP)
Additional investigation is required to delineate the extent of VOCs in borings PP08, PP12 and PP15. This AOC is located on a potential "groundwater divide". One monitoring well will be installed downgradient (east) of these borings within the PP area. In addition, one of the SRP wells will be installed downgradient to the west of the PP area. Groundwater sample will be analyzed for VOCs. Figure 7 provides the location of the monitoring well within the PP.

RCRA AOC 9: Ethyl Chloride Production Area (EC)
Additional investigation is required to delineate the extent of VOCs in boring EC10. One monitoring well will be installed near boring EC10. The groundwater sample will be analyzed for VOCs. Figure 8 provides the well location. One of the SRP wells will be installed downgradient (west) of this area.

RCRA AOC10: Tubular Water Reactor Area (TWR)
Additional investigation is required to delineate the extent of VOCs in boring TWR13. One monitoring well will be installed near boring TWR13. The groundwater sample will be analyzed for VOCs. Figure 9 provides the well location.

RCRA AOC 11: North Uploading Area (NU)
Additional investigation is not required for this area.

Five additional soil samples will be collected for fraction organic carbon analyses from AOC areas determined during field activities. Samples will be collected from areas not impacted by AOCs. TPH analysis will be conducted on the fraction organic carbon samples to confirm absence of impact.

Summary of Work
Sixteen additional groundwater monitoring wells and five soil borings will be installed/advanced as part of this investigation. Ten soil samples will be collected for fraction organic carbon and TPH: gas, diesel, and oil range.

Methods

Soil Sampling
Soil samples will be collected by advancing a Geoprobe MacroCore™ sampler to a depth range of 6 to 12 feet below land surface (BLS). Boring depths will be dependent on the observable groundwater level at the time of sample collection. The MacroCore™ samples will be approximately 1.5 inches in diameter and 48 inches in length. Following retrieval of each soil sample from the MacroCore™ sampler, the plastic liner will be removed and the following information will be documented in the field notes:

- Sampler type, sample numbers, and depth;
- Photoionization detector (PID) readings at one foot intervals;
- Interval sampled for laboratory analyses;
- Soil description – visual classification in general accordance with United Soil Classification System (ASTM D-2488), including soil type, color, and moisture;
- Inspection of soil samples for staining, odor, or other indications of impact; and,
- Completed depth of the probehole.

Two soil grab samples (2 to 3 feet and above observable groundwater level) will be obtained from each boring. A third soil sample may be collected if an interval has a high PID reading or other indications of organic impact based on visual or odor observations. All soil samples will be collected above the observable groundwater level at the time of sample collection.

Soil samples for VOC analysis will be collected by USEPA method 5035 using a syringe-type disposable sampler to collect four approximately 5-gram samples from each sample location. Two of the 5-gram samples will be placed in a pre-weighed 40-milliliter vial with a septum sealed screw cap that contains a stirring bar and sodium bisulfate preservative solution; this sample is for laboratory analysis of low concentrations of VOCs in the range of 0.5 to 200 micrograms per kilogram (ug/kg). One of the 5-gram samples will be placed in a separate pre-weighted 40-milliliter vial with septum screw cap containing 5 milliliters of methanol, a water-miscible organic; these samples are for laboratory analysis of high concentrations of VOCs greater than 200 ug/kg. A fourth vial containing deionized water will also be filled with a 5-gram sample in case the soil sample has a high carbonate content, resulting in effervescence of the sodium bisulfate preservative solution. In addition, a 2-ounce jar will be filled with soil from the sampled interval to obtain the dry weight.

Samples collected for laboratory analysis from each probehole will be submitted for analysis of Volatile organic compounds (VOCs): USEPA Method SW846-8260.

In addition, fraction organic carbon [foc, also referred to as Total Organic Carbon] will be determined utilizing samples analyzed for Total Organic Matter using method ASTM D2974. Fraction organic carbon will be calculated from Total Organic Matter concentrations using the Illinois EPA recommended conversion factor of 0.58.

The vials and jars containing the soil samples will be placed in iced coolers and chilled to approximately 4 degrees Centigrade. Appropriate data will be recorded on the chain-of-custody forms. The samples will be delivered to Severn Trent Laboratories for analysis.

Following completion of sampling, each of the probeholes will be filled and sealed with granular bentonite. Decontamination fluids, disposable supplies and soil cuttings will be placed in 55-gallon drums for disposal.

Monitoring Wells

Monitoring wells will be installed using a drilling rig with hollow-stem augers. The monitoring wells will intersect the shallow groundwater table. The wells will be constructed of schedule 40 PVC riser and screen (0.010-inch slot). All of the filter sand packs will be brought to approximately one foot above the top of the screen. The wells will be completed by filling the remaining annular space (i.e.,

the space above the filter sand pack) with a bentonite seal and finishing with a flush-mount or stickup well protector within a concrete surface seal. Following installation the monitoring wells will be surveyed. Specific well construction information will be documented on well construction logs.

Wells will be developed to the extent possible by removing at least 5 well volumes and/or until the field parameters of temperature, conductivity, and pH have stabilized. Well development forms will be completed.

Groundwater Sampling

Groundwater samples will be collected from the 16 wells. The sampling and groundwater measurements will be taken a minimum of 48 hours after well development has been completed. Prior to groundwater sampling, wells will be purged by removing 3 well volumes with a disposal polyethylene bailer. If insufficient groundwater recharges to the well for removal of 3 well volumes, the well will be bailed to the bottom of the screen and allowed to recover. VOC samples will be collected within a maximum of 2 hours of purging of the well. Following bailing of each well volume, the field parameters of pH, temperature, and conductivity will be measured and documented. Groundwater samples will be collected from each well and analyzed for VOCs, PAHs, or select metals as follows:

- VOCs: USEPA Method SW846-8260B;
- PAHs: USEPA Method SW846-8310;
- RCRA total metals - Chromium and Lead: USEPA Method SW846-6010B;
- RCRA total metals - Selenium: USEPA Method SW846-7000G;

Groundwater samples for VOC analysis will be collected using two 40-milliliter vials with a septum sealed screw cap that contains a sulfuric acid (HCL) preservative solution. Samples collected for metals analysis will be placed in a plastic container and preserved with nitric acid (HNO_3).

In addition to the primary groundwater samples collected, duplicate groundwater samples will be collected for Quality Assurance and Quality Control (QA/QC) from ten percent (i.e., two) of the wells. Water sampling data sheets will be completed.

Field Surveying and Water-Level Measurements

All soil sample locations and monitoring wells will be surveyed for horizontal and vertical control to an accuracy of 1/100th foot. Water levels will be measured in monitoring wells using a Solinst electronic water-level meter to an accuracy of 1/100th foot. Water level measurements will be provided on the well development field sheets and will also be shown on the boring logs.

Field Hydraulic Conductivity

In-situ hydraulic conductivity tests will be performed on two to three monitoring wells. One falling head slug test will be performed on each well using standard

slug-testing methods. Prior to beginning each test the well depth and static groundwater level will be measured. A PVC slug bar will be lowered into the well, instantaneously displacing water within the well upward. The data will be analyzed with the use of AQTESOLV™ for Windows, an aquifer test package by HYDROSOLVE.

As stated earlier, Equistar will begin field activities on July 11, 2005. Should there be any comments on this workplan, please contact me at (713) 309-7794. If you would like to visit the site during the field activities please contact Jason Pontnack at (217) 253-1558.

Sincerely,

David Guier
Remediation and Retained Liabilities Program Manager

cc: Jason Pontack, Equistar
Harry Walton
Stu Cravens
Ken Liss

0418080002—Douglas County
Tuscola/EQUISTAR CHEMICALS, LP
ILD005078126
Groundwater File (807 wells)
RCRA Closure File (RFI wells)
Inspector: Jeff Turner
Inspection Date: 7/26/2004

Monitoring Well Inspection

Introduction

I conducted an inspection of groundwater monitoring wells at Equistar Chemicals, LP between 9:00 A.M. and 3:00 P.M. on the above date. I interviewed Jason Pontnack, Environmental Engineer. Weather conditions during the inspection were sunny with a light breeze and temperatures in the 70s.

This inspection was originally attempted on 19 February 2004. It could not be completed that day because Equistar was not in possession of the keys to the monitoring wells, apparently due to a recent change in consulting firms. Following that day, a combination of conflicting schedules, bad weather, and intervening priorities deferred another attempt until today's date.

Background

Equistar Chemicals, LP is located approximately three miles west of Tuscola, Illinois on US Route 36. The property borders the Kaskaskia River on the west, to which the plant's treated wastewater is discharged under an IEPA-issued NPDES permit. Certain other liquid wastestreams, including stormwater runoff, ion exchange waste from the alcohol unit, and water-soluble organics from the powdered polyethylene unit are deepwell injected under an IEPA-issued UIC permit. Equistar also withdraws water from the Kaskaskia upstream of its NPDES outfall for processing into potable water under an IEPA-issued public water supply permit. Equistar formerly supplied potable water to the cities of Tuscola and Arcola, as well as its industrial neighbor, Cabot Corporation, but ceased in March 1993, when Northern Illinois Water Corporation completed a pipeline from Champaign-Urbana to Tuscola. Equistar now processes river water for its own industrial and sanitary usage; it buys bottled water for drinking.

The Tuscola plant went online in 1953. The plant was originally called United States Industrial Chemicals ("USI," the name found in the older portion of the Agency's files), a subsidiary of National Distillers and Chemical Corporation. When USI became part of Quantum Chemical Corporation, this plant became the USI Division. The British company Hanson bought Quantum Chemical Corporation in 1993 and changed the name to Quantum Chemical Company. Quantum was "demerged" into Millennium Chemicals, Inc., c. 1996. The Tuscola plant became Millennium Petrochemicals, Inc., a division of Millennium Chemicals, Inc.

In December 1997, Millennium and Lyondell Chemical Company merged their olefin and polymer operations and assets into a new corporate entity, Equistar Chemicals, LP. Occidental Petroleum Corporation joined the partnership in 1998, but sold its interest to Lyondell in 2002. As a result, Lyondell then owned 70.5% of Equistar, while Millennium owns 29.5%. In April 2004, it was announced that Lyondell would merge with Millennium and retain the name Lyondell Chemical Company. If this merger is approved (at the time of writing, the deal had not yet closed), Lyondell will be the sole owner of Equistar. What that means for Equistar's corporate status, name, and so forth, I won't conjecture. In this report, I will refer to the Tuscola plant as Equistar even when referring to times prior to Equistar's creation.

Equistar has manufactured a variety of chemical products over the years. From 1953 to 1972, Equistar manufactured sulfuric acid. From 1957 to 1972, Equistar produced phosphoric acid. Ethylene was formerly produced at the site by cracking ethane, but the ethylene unit was decommissioned on 1 October 1991. An ethylene feedstock is now piped in from Equistar's Morris, Illinois plant. Polyethylene was also formerly produced on-site from ethylene, but this production was terminated in August 1994, also ending the production of the ethylene vinyl acetate (EVA; Vynathene®) copolymer. The Tuscola plant currently produces only ethyl alcohol, ether, and powdered polyethylene. Equistar also operates a wastewater treatment plant, which treats both the facility's industrial and sanitary wastewater streams. The facility formerly operated its own coal-fired power plant and propane storage and loading facilities, but these have been sold to Trigen/Cinergy and BP Amoco (operated by Dome Petroleum), respectively. The potable water processing plant has also been sold to another entity, with Equistar retaining an option to buy it back within twenty years.

As a result of the various production processes and the power plant, a number of waste piles, primarily coal ash and gypsum, exist in the north-central portion of the property. These were closed in 1994 under a 35 Illinois Administrative Code Part 807 solid waste closure. Equistar has completed an assessment of groundwater contamination emanating from the waste piles.

A RCRA Facility Investigation/Corrective Measures Study (RFI/CMS) is also currently underway at the Equistar facility. The RFI/CMS was prompted by a 1999 invitation from USEPA to enter a "voluntary" agreement (to decline would have meant referral for an administrative order). Since this RFI/CMS is being implemented under a new federal program instead of a RCRA permit, it is being overseen by USEPA instead of IEPA. Millennium was performing the work because they or their direct predecessors owned the site during the majority of the time that any contamination may have occurred. The agreement between USEPA and Millennium was executed on 30 September 2000. The RFI/CMS involves many SWMUs at the facility, including at least some of the North Plant solid waste closure areas. During the current inspection, Pontnack stated that Equistar personnel would be assuming RFI responsibilities from Millennium as a result of the Lyondell/Millennium merger.

Inspection Findings

Equistar's most recent groundwater supplemental permit, 2002-030-SP (7/17/2002) lists nineteen wells in the solid waste (Part 807) groundwater program. Some of these are shared with the RFI/CMS program, which itself has at least seventeen additional wells that are not shared with the 807 program. Thus, there are at least thirty-six monitoring wells at the plant. Inspecting them proved to be an adventure of discovery for both Pontnack and me.

There are a fair number of wells and piezometers at the site that apparently belong to neither the 807 nor the RFI program. Two such wells near the potable water plant west of Ficklin Road were the first wells inspected; neither had any designation marked on them. Due to their proximity to the wastewater plant and the fresh water lake, I suspect they were RFI wells that have been removed from the program. On Areas 5, 6, and 7 (closed landfills), we found a number of wells designated "CLW-9," "CLW-10," etc. We also found two wells with one-inch inner casings. Since those and the CLW-wells are atop landfills, we suspected they might be some time of leachate well. Chris Bland, Equistar's former HSE Manager and Production Superintendent, left the company recently and took with him a wealth of knowledge about the plant that may be difficult to find elsewhere. Pontnack, who only recently began to deal with the monitoring programs, did not know what these wells were.

I was unable to inspect the inside of RFI well MW-01S, which when opened, revealed a colony of wasps. Pontnack received a sting on the back of his hand while attempting to relock the well. Because the routine sampling of the wells was scheduled for later in the week, he made a note to advise the sampling crew to come prepared to deal with wasps. I cautioned against using any type of chemical that could contaminate the well or samples.

The reason the rescheduling of this inspection had been so long delayed was that at least ten wells were located in agricultural fields, and an unusually wet spring in Douglas County had kept those wells inaccessible. By the time of the current inspection, getting bogged down in mud was no longer an issue, but another obstacle intervened— closely packed, 8'-tall corn. Tall white masts had been installed near the wells to mark their locations, so we knew where they were, but getting to them was a different story. The 807 cluster G106-G206-G306 stands a short distance west of the West Gypsum Pile (Area 5). Since it was probably only a dozen rows or so into the field, we worked our way out to it. For the other wells, such as G119, which were much farther out into the field, I elected not to attempt to reach them. Damage to the farmer's crop would have resulted, and there was also the very real possibility of getting out into the field and getting lost, since the corn was far too tall for even Pontnack to see over. One or two wells were located in soybean fields, but again, I didn't want to tear up the farmer's crop, and Pontnack was uncertain how that would be addressed in Equistar's access agreements (which are apparently expired and in need of renewal).

For those reasons, I deferred the inspection of ten wells: G107, G116–G117, G119–123, G127/MW-09S, and MW-09D. Two additional wells, G112 and G105, were on the wrong side of fences and while we intended to return to them at the end of the inspection, they were forgotten. Two RFI wells, MW-08S and MW-08D, should have been located just of a county road east of the

East Gypsum Pile (Area 2), but could not be found. I told Pontnack that I would attempt to inspect all these wells at a later date, such as when I return for the annual UIC inspection in late September, when the fields should be cleared.

The wells that were inspected were generally in good condition, more so than I usually encounter. This is probably due to two factors. First, I had cited well maintenance violations and made recommendations during a groundwater inspection in May 1998, and many wells were repaired and upgraded based on that inspection. Second, the large number of wells subsequently installed due to the 807 assessment and the RFI are relatively new and were also able to take advantage of the recommendations from the 1998 inspection.

In spite of the overall good condition of the wells, I did note a few problems or issues.

- RFI well MW-03D had a half-inch gap between the outer protective casing and the surface seal.
- RFI well MW-14 had no drain hole near the bottom of the outer protective casing.
- RFI wells MW-06S and MW-06D had air-tight inner caps with no vents, although they were set loosely atop the casing so the well could breathe.
- 807 well G124 had a small amount of water between the casings (below the drain hole), and its protective guard posts had been destroyed.
- 807 well G111 had a small amount of water between the casings (below the drain hole), and its cement surface seal was buried and couldn't be inspected.
- 807 well G108, which had been completed as a flush-mount for some reason, had a vented inner cap, which in this case could let runoff enter the well, and didn't have a locking cap (locking outer vaults and locking inner caps are available for flush-mounts).
- The outer protective casings of a few wells, primarily the older 807 wells such as G114 and G115, are getting very rusty, and a new coat of paint would be recommended for all the wells at the site.
- Although all the wells currently in either the 807 permit or the RFI program were labeled adequately, many of the labels are on the verge of deteriorating past the point of legibility. It would be a good idea to relabel all site wells by a more permanent method.
- There were many wells and piezometers at the plant that do not appear to be part of any program. It is still necessary to maintain them, since a compromised well or piezometer can allow contaminants from the surface to enter an aquifer. Most of these wells were in adequate condition, although CLW-11 did not have a drain hole and an unlabeled well atop Area 6 did not have a cap vent. The piezometers at the site did not have outer protective casings or surface seals, and one of them (adjacent to well G114 and to an agricultural field) didn't even have a cap— it was open to the sky. Equistar should research these wells to determine if they are still part of a regulatory program and if not, they should consider properly sealing and abandoning them.

One miscellaneous observation I made was the emanation of leachate from the closed Gypsum Piles. It is transferred by gravity flow and lift stations to the on-site deepwell system, where it is injected in accordance with Equistar's UIC permit, UIC-006-W1-US. Pontnack mentioned that the

drainage ways are being addressed under the RFI for USEPA. Photos 40–42 depict the leachate flow-way at the northwest corner of the West Gypsum Pile (Area 5).

Summary

None of the well issues I observed rise to the level of being considered a violation. Since the RFI wells are part of a federal program, basically the only state requirement that pertains to them is §12(a) of the Illinois Environmental Protection Act, and the minor issues with the RFI wells don't seem to cause, threaten, or allow water pollution. For the 807 wells, none of their issues is really prohibited by the permit. The closest would be the lack of a lock on G108. However, the relevant permit condition, 2002-030-SP, Attachment A, # 10, does not apply, as it requires a lock on the portion of the well extending above ground, and this flush-mount well has no portion extending above ground. Similarly, the unknown and possibly unused wells I observed at the site do not appear to have ever been under the 807 permit, so the requirement to abandon wells not in use does not attach. Therefore, these issues will be addressed to Equistar in the form of recommendations.

Attachments

1. Monitoring well integrity inspection checklist
2. Facility diagram
3. Inspection photos

Equistar Tuscola Face To Face

4/15/05

Lyondell owner - manged out of Houston.
Lyondell wants to move project to
State of Illinois - SRP → Jim Moore & Hal (last wk.)
Ammended agreement. Larry Estep

Get it under one agency,

SRP in name only.
Jim Moore's people handle it

217-841-9230 - Jason

217-524-32~~84~~95 - Jim

Meeting Participants
Meeting with Millennium Petrochemicals Representatives at EPA Region 5 - April 15, 2005

NAME	REPRESENTING	EMAIL	PHONE
Peter Romanauskas	USEPA	romanauskas.peter@epa.gov	312-886-7890
Ron Hutchens	Environ	rhutchens@environcorp.com	847/444-9200
Harry Watton	Equistar Consultant	iac742taco@insightbb.com	217/428-6782
David Guier	Equistar	david.guier@lyondell.com	713-309-7794
Barbara Coughlin	Environ	bcoughlin@environcorp.com	847 4449200
Jason Pontnack	Equistar	jason.pontnack@equistar.com	217-253-1558
Allen Debus	USEPA	Debus.Allen@epa.gov	312-886-6186

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

File

REPLY TO THE ATTENTION OF:
DW-8J

January 7, 2005

Mr. Ronald E. Hutchens, P.E.
Managing Principal
Environ Corp.
740 Waukegan Road, Suite 401
Deerfield, IL 60015

Re: Millennium Petrochemicals, Inc.
Tuscola, IL - ILD 005 078 126

Dear Mr. Hutchens:

Attached please find U.S. EPA comments on the following documents: RCRA Facility Investigation Report and Corrective Measures Workplan dated August 19, 2004; and the MW03S Area Summary Report dated October 19, 2004. We request a written response to these comments by March 2005.

If you have any questions, please feel free to contact me at (312) 886-7890.

Sincerely,

Peter Ramanauskas
Environmental Scientist
Waste Management Branch
Corrective Action Section

cc: Jeff Turner, IEPA

Attachments: 1

U.S. EPA Comments on RCRA Facility Investigation Report;
Corrective Measures Workplan
Millennium Petrochemicals, Inc. - ILD 005 078 126
August 19, 2004

Comment 1:

The last paragraph of Section 1.1 states that the sampling done to date at these areas of the site have characterized, with limited exceptions, the extent of site impacts associated with the remaining AOCs and notes that the Corrective Measures Workplan will address those areas where additional sampling is necessary. Section 1.1 makes the statement that "Once this additional assessment work is completed, Millennium will have satisfied all of its site investigation obligations under the VCAA." This statement may not be accurate should the work being performed under the Corrective Measures Workplan reveal additional impacts to soil/groundwater which may require further investigative work.

Comment 2:

The last paragraph of Section 1.3 states that the groundwater exposure pathway is considered to be incomplete as groundwater at the facility is not used for potable water and there are no plans for future use of groundwater at the site. Before any pathways can be excluded, the extent and concentrations of contaminants of concern above Tier 1 residential objectives must be known (742.300(b); TACO Fact Sheet 8). As there is further delineation work for soil and groundwater being planned under the Corrective Measures Workplan, it is premature to exclude pathways. While the groundwater ingestion pathway may be incomplete for on-site receptors, Millennium must show how the TACO Ingestion of Groundwater and/or Migration to Groundwater pathway exclusion criteria presented in 35 IAC Subpart C are satisfied.

Comment 3:

Millennium uses the rationale of an incomplete on-site groundwater use pathway for not performing further investigation of potential groundwater impacts at areas where a Tier 1 SRO^{GW} is exceeded. However, Millennium is proposing to investigate groundwater at the Former Ethylene Production Area (Section 4.3.4) because Benzene exceeded the Tier 2 Construction SRO. As stated in Comment 2, it is premature to exclude pathways. Millennium should calculate Tier 2 SRO^{GW} and evaluate soil concentrations values versus this value at all areas exceeding Tier 1 and where reporting levels are elevated beyond Tier 1 (e.g. EX15 at 2 to 4 feet for benzene). The Tier 2 SRO^{GW} shall not exceed the soil saturation limit.

Section 1.3 states that soil samples from the saturated zone are not considered to represent soil quality as they may be impacted by the presence of groundwater constituents. Thus, constituents of concern could be present in groundwater above acceptable Class II values. Groundwater should be sampled directly to evaluate groundwater conditions where: 1) Tier 2 SRO^{GW} are exceeded in soils, 2) there are samples from the saturated zone where contaminants are noted

above screening values (e.g., CL08 benzene at 16-18 feet over Class II GW GRO, FP08 PAH at 10-12 feet over Class II GW GRO), or 3) sample reporting limits are elevated above screening levels (e.g., EX06 at 8 to 10 feet for benzene over Class II migration to groundwater value).

If groundwater is found to be impacted above Tier 1 Class II GRO levels, full delineation of impacts should take place in the horizontal and vertical direction before the groundwater pathway can be excluded under TACO as per 35 IAC Subpart C. Temporary wells may be used to search for impacts, check for LNAPL/DNAPL, and delineate extents. Permanent wells may be needed at the boundaries of any discovered plumes for monitoring purposes to ensure the plume is not migrating. Modify the Corrective Measures Workplan to address these situations.

Comment 4:

Section 3.1.1. states that the bootstrap method for 95% UCL calculation is approved by IEPA. Provide a citation or reference for this approval.

Comment 5:

Referring to Section 3.1.2., field duplicate samples should not be averaged prior to 95% UCL calculation to evaluate site risk. Where there is uncertainty about the actual analytical level of a constituent, U.S. EPA elects to use the more conservative result for risk evaluation. Recalculate 95% UCLs as necessary. Provide example calculations of averaging via 95% UCL for one of the study areas and a table showing total samples collected, total samples used in the calculation (i.e., total collected minus saturated samples minus duplicate samples), percentage of non-detects out of total samples used in calculation.

Comment 6:

For the purposes of ensuring that organic contaminant residual concentrations are below the soil attenuation capacity, all residual organic concentrations must be summed. The report seems to sum only the TIC values, but excludes other organics such as BTEX/VOC/SVOC. Revise the report to include all residual organics in the summation. 35 IAC 742.305(b) states that concentrations of residual organics remaining in soils should not exceed the soil saturation limits as determined under Section 742.220. Revise the report to show that soil saturation limits for organic chemicals present in soils are not exceeded.

Comment 7:

Former Fractionation Process Area: Section 4.2.3. states that exceedances in in boring FP08 are below the water table and do not need to be considered as per IEPA regulations. While the PAHs present in FP08 may not be used for evaluation of the soil migration to groundwater potential, Millennium needs to clarify in which matrix the contamination is present. If the sample does not represent soil contamination as stated on page 5, groundwater contaminant levels should be evaluated as noted in Comment 3. The calculated Tier 2 SROs for PAHs (and all constituents

for which Tier 2 SROs are/will be calculated) should be presented in Table 2. Modify the Corrective Measures Workplan as needed.

Comment 8:

Former Polyethylene Production Area: Referring to the fourth paragraph of Section 4.4.2., samples collected from the soil borings surrounding the eight borings from which samples were not collected should be compared to Tier 2 SRO^{GW} values. In addition to the temporary well at PE13, a temporary well should be placed near PE03 to evaluate groundwater conditions and check for LNAPL/DNAPL. Modify the Corrective Measures Workplan as needed.

Comment 9:

Former Fire Training Area: As Millennium is checking other areas of the plant for product, sample soil/groundwater (including check for LNAPL/DNAPL) at FT13 in work done under the Corrective Measures Workplan due to petroleum odor noted there.

Comment 10:

Former Polymer Pilot Plant Area: The 4th paragraph of Section 4.7.2 mentions that sample PP10 has elevated reporting limits for BTEX and states that since these elevated reporting limits are below the SROs, data quality is not compromised. What about the remaining VOCs at this location and other locations with elevated reporting limits? Ensure that elevated reporting limits are not above Tier 1 SROs for all other analytes as well. Confirm that this is done at all other areas as well. PCE, TCE, Vinyl Chloride are detected in the saturated zone. If these soil samples are being impacted by the presence of groundwater constituents, PCE, TCE, and VC are present in groundwater at elevated levels. Sample the groundwater in this area as per Comment 3 and investigate for the presence of LNAPL/DNAPL. Modify the Corrective Measures Workplan as needed.

Comment 11:

Former Ethyl Chloride Production Area: Groundwater should be sampled at the Former Ethyl Chloride Unit to check for the presence of VOCs at EC02 (cyclohexane over R9PRG saturation limit), EC14 (cis-1,2-DCE in saturated zone over Class II GRO), EC10 (Vinyl Chloride in saturated zone over Class II GRO), EC16 (PAHs over Class II GROs), EC19 (Vinyl Chloride over Class II GRO) as per Comment 3. A check for LNAPL/DNAPL should be done at this area. Modify the Corrective Measures Workplan as needed.

Comment 12:

Former Tubular Water Reactor Area: In addition to the proposed TWR13, groundwater should be sampled at TWR07 as benzene is present in the saturated sample over Class II GRO (see also Comment 3). These wells should be checked for LNAPL/DNAPL and sampled for VOCs. Modify the Corrective Measures Workplan as needed.

Comment 13:

Former North Uploading Spot: The four soil borings in this area showed PID headspace readings exceeding the instrument maximum of 2000 ppm consistently to the bottom of each boring. Environ states that based on analytical data, PID results are not indicative of soil contamination. While this may be the case, this area historically managed vinyl acetate which is known to have poor recoveries by Method 8260B. Because the analytical results in soils for the remaining VOCs and PAHs run under Methods 8260B and 8270C at the Former North Uploading Spot are non-detect or below screening criteria, U.S. EPA is concerned that these high PID readings may be caused by the presence of NAPL. Vinyl acetate is highly soluble in water and may have migrated to the water table. Modify the Corrective Measures Workplan to include temporary wells at the locations of the soil borings to check for the presence of LNAPL/DNAPL and the sampling of groundwater for VOC/SVOC.

Comment 14:

Referring to Section 3.1 of the Corrective Measures Workplan, soil sampling intervals should be defined as best as possible (e.g. surface soil (0-2 ft), immediately above water table, and one location shown to be high in organic vapors by PID reading or visual/odor observations). Surface soil samples collected for VOC analysis should be taken from below the top 6 inches of soil. EnCore samplers should be used.

Comment 15:

Referring to Section 3.4 of the Corrective Measures Workplan, confirmatory samples collected for VOC analysis should not be composited. Sidewall confirmatory samples for VOC analysis should be collected from the 6 to 12 inch interval below ground surface. Provide additional information on the grid network to be used to guide confirmation sampling and how much areal extent of soil should be removed in the event that SROs are exceeded.

Comment 16:

Millennium should submit an updated QAPP for the work that will be done under the Corrective Measures Workplan reflecting laboratory, SOP, and other QA/QC changes made since switching from Clayton Group Services to Environ.

Comment 17:

Throughout Section 3.0 (pages 4 to 6), there is no indication that the low level option of SW-846 methods 5035A (or 5035) will be combined with 8260B analysis in the case of soil samples. The method proposed for analysis of VOCs in soil will not be accepted and any data submitted using this technique will be rejected. Millennium should supplement the QAPP with project-specific SOPs indicating how sampling and low level analysis of VOCs will be properly performed in a conservative manner (i.e. with respect to atmospheric losses of VOCs). This approach should be

applied to any post-excavation sampling as well as other sampling where it is necessary to generate VOCs data in soil samples. Sampling and analysis should be conducted in a manner consistent with the Region 5 QA Policy for RCRA (1998).

Comment 18:

References to the 'array of chemicals' and the 'appropriate analytes' appearing on pages 4 and 6 respectively, should be specified.

Comment 19:

In the last paragraph on page 6, add the phrase 'or less' after the phrase 'at a rate of one per every twenty'.

Comment 20:

Referring to the last line on page 6, the document should be revised to indicate that PES sample turn-around time frame (and method of sample processing) will be consistent with 5035 & 5035A guidelines.

Comment 21:

The name and address of the laboratory that will perform the analyses should be identified and their relevant SOPs should be submitted for review. A table with laboratory detection limits compared to appropriate SROs and GROs for intended analyses should be included. Chain of custody procedures should be discussed as well as how data will be qualified and validated.

Comment 22:

Prior to sampling temporary monitoring wells, field parameters should be measured to gauge whether the water formation is stable. Millennium should proposed a set of field parameters and provide the field analytical SOPs for measuring them.

U.S. EPA Comments on MW03S Area Summary Report
Millennium Petrochemicals, Inc. - ILD 005 078 126
October 19, 2004

Comment 1:

The second paragraph on page 2 states that compounds detected in soils and WWTP sludges are not present at levels that could account for the observed groundwater concentrations. What is the basis for this statement? A similar statement is made in Section 4.0. Levels detected in samples exceed TACO Tier 1 Soil Component of Ground Water Ingestion for Class II ground water. Benzene was detected in closed WWTP lagoon 1 at 13 ppm which is 76 times the SRO (0.17 ppm). The corresponding groundwater sample at that location was 1.4 ppm which is 56 times the Class II GRO (0.025 ppm). The statement is made that "subsequent analytical results" (i.e. subsequent to the May 15, 2003 report) do not support the assertion that the WWTP ponds are the source of the groundwater plume, yet the data presented are from November 2002.

The U.S. EPA does not agree with Environ's conclusion that the closed lagoons are not a source of groundwater contamination in that area. The lagoons were unlined and closed with contaminated sludges remaining in place. Per 40 CFR 261.4(2), sludges generated by industrial wastewater treatment are not exempt from solid waste regulation and the closed lagoons will be addressed under U.S. EPA RCRA Corrective Action authority at this facility. Millennium should evaluate remedial options for these lagoons in the Corrective Measures Study.

Comment 2:

Section 4.0 of the report proposes exclusion of the groundwater ingestion exposure route. This may be granted; however, U.S. EPA would like Millennium to submit supporting information related showing how the substantive requirements of 35 IAC 742.320 noted in the bullets of Section 4.0 are satisfied. Source removal/treatment of sludges in the closed lagoons should be evaluated as per Comment 1 above.

Comment 3:

Regarding the remaining active WWTP lagoons, as agreed to between U.S. EPA and Millennium, cleanup of active lagoons may be deferred to closure provided that there are no adverse impacts to groundwater. U.S. EPA recommends that Millennium install additional groundwater monitoring wells to the north, east and west of the active WWTP lagoons and develop a monitoring plan for all wells surrounding the lagoons. A contingency plan should also be developed should groundwater exceed applicable GROs. At the time of lagoon closure or should GROs be exceeded during monitoring, Millennium must notify the Illinois EPA Bureau of Water and Bureau of Land.

William Tong/R5/USEPA/US
01/05/2005 03:08 PM

To Peter Ramanauskas/R5/USEPA/US@EPA
cc Patrick Kuefler/R5/USEPA/US@EPA, Jose Cisneros/R5/USEPA/US@EPA, Peter Swenson/R5/USEPA/USm David Stoltenberg/R5/USEPA/US@EPA, Mike Lin/R5/USEPA/US@EPA, Russell Martin/R5/USEPA/US@EPA
bcc
Subject Re: Closure of wastewater aeration lagoons

Hello. I was forwarded your message regarding the closure of wastewater lagoons. This is an Illinois EPA call, and according to Dean Studer, supervisor at the IEPA NPDES permits program, State RCRA regs only apply if the sludge is a hazardous waste. Domestic sludge generally does not fit this definition. In water, IEPA does not terminate the NPDES permit until the sludge has been removed from the lagoon and has been properly disposed of and the lagoon berms leveled
and the outfall pipe removed. (See attached message below).

Thanks to Peter Swenson for relaying the message to and from Dean Studer at Illinois EPA.

Bill Tong, Environmental Scientist
Water Enforcement & Compliance Assurance Branch
U.S. Environmental Protection Agency - Region 5
77 W. Jackson (WC-15J)
Chicago, IL 60604
Phone: (312) 886-9380
FAX: (312) 886-0168

Peter Swenson/R5/USEPA/US

Peter Swenson/R5/USEPA/US
01/05/2005 03:02 PM

To
Subject Fw: Closure of wastewater aeration lagoons

Bill
See below
Peter

----- Forwarded by Peter Swenson/R5/USEPA/US on 01/05/2005 03:01 PM -----

Dean Studer <Dean.Studer@epa.state.il.us>
01/05/2005 01:12 PM

To
Subject Re: Fw: Closure of wastewater aeration lagoons

Peter,
Our RCRA regs only apply if the sludge is a hazardous waste. Domestic sludge generally does not fit this definition. In water we do not terminate the NPDES permit until the sludge has been removed from the lagoon and has been properly disposed of and the lagoon berms leveled and the outfall pipe removed.
Dean

>>>dean.studer@epa.state.il.us>01/05/05 12:02 PM >>>

I'm not aware of any unlined aerated lagoons. Our Design stds require

either a liner or an "impervious" layer of compacted clay with a perviousness of no less than 1 X 10(-7) cm/sec. However, I'll check with our RCRA people and get back to you.
Dean

>>> <Swenson.Peter@epamail.epa.gov> 01/05/05 10:50 AM >>>
Dean
Would you happen to know the answer to this question?
Peter

----- Forwarded by Peter Swenson/R5/USEPA/US on 01/05/2005 10:49 AM -----

William

Tong/R5/USEPA/US

01/05/2005 08:50 AM

To: Russell Martin/R5/USEPA/US@EPA, Peter Swenson/R5/USEPA/US@EPA, Mike Lin/R5/USEPA/US@EPA, David Soong/R5/USEPA/US@EPA, David Stoltenberg/R5/USEPA/US@EPA

cc

bcc

Fax to

Subject

RE: Closure of wastewater

aeration lagoons

I'm referring a question to you from one of our RCRA program colleagues...

In the state of Illinois, who has jurisdiction over the closure of unlined wasterwater aeration lagoons when they are no longer in service?
Is it Illinois EPA, and is it the state's NPDES permit program that is the control authority? Does the RCRA program (state and/or EPA) have any authority to rquire groundwater monitoring to ensure proper closure.
Thanks for any assistance you can provide.

Bill Tong, Environmental Scientist
Water Enforcement & Compliance Assurance Branch
U.S. Environmental Protection Agency - Region 5
77 W. Jackson (WC-15J)
Chicago, IL 60604
Phone: (312) 886-9380
FAX: (312) 886-0168

ENVIRON

December 10, 2004

Sent Via FedEx

Mr. Peter R. Ramanauskas
United States Environmental Protection Agency
77 West Jackson Boulevard
Mail Code: (DW-8J)
Chicago, IL 60604-3507

Re: Response to November 20, 2003 Comments
MW03S Area Investigation
Millennium Petrochemicals, Inc., Tuscola, Illinois
ILD005078126

Dear Mr. Ramanauskas:

At your request, on behalf of the Lyondell Chemical Company (Lyondell), formerly Millennium Petrochemicals, Inc. (Millennium), ENVIRON International Corporation (ENVIRON) provides the following responses to the comments received from the United States Environmental Agency (USEPA).[1] In November 2003, Millennium retained ENVIRON to be the designated environmental consultant for the Tuscola Facility. On December 1, 2004, both Millennium and Equistar Chemicals became wholly owned subsidiaries of Lyondell.

In January 2004, ENVIRON had discussions with the USEPA regarding the change in consultants and environmental issues at the Tuscola facility. Additional meetings with the USEPA were held in May and June 2004 to further clarify the outstanding issues. ENVIRON has submitted four environmental reports to the USEPA regarding the Tuscola Facility in 2004, including the *MW03S Area Summary Report.*[2] Based on our conversations with the USEPA and submittal of the *MW03S Area Summary Report*, we did not believe that a response to the November 20, 2003 letter was necessary.

The comments are presented in italic format with the responses following in normal format.

Comment 1:
A review of the information in the document indicates the Wastewater Treatment Ponds 1, 4, and 6 were essentially closed as landfills between 1983 and 1986 as between four to six feet of wastewater treatment sludge appears to remain in the ponds. This would indicate that the ponds are subject to the requirements of 35 Ill. Adm. Code 800-817. As such, in accordance; with 35 Ill. Adm. Code 742.105, the procedures set forth in 35 Ill.

[1] Letter from Peter Ramanauskas, USEPA to Monte Nienkerk, Clayton Group Services. Re: MW03S Area Investigation, Illinois EPA TACO Comments, dated November 20, 2003.
[2] *MW03S Area Summary Report.* Prepared for: Millennium Petrochemicals, Inc., prepared by: ENVIRON International Corporation. Dated October 19, 2004.

Adm. Code 742 cannot be used for these units. Thus, it is not appropriate to use TACO in evaluating the soil and groundwater contamination in the vicinity of these units.

Response:
Based on the discussion presented in *MW03S Area Summary Report*, the Wastewater Treatment Ponds do not appear to be the source of contamination in the MW03S Area. Consequently, at this time, no effort is being made to address the ponds using 35 Ill. Adm. Code 742.

Comment 2:
It appears as though additional ponds were found at the facility during the MW03 area investigation (referred to as wastewater treatment ponds 1 through 6 in the MW03 report) beyond those identified in Figure 3 of the Environmental Indicators report. This numbering is somewhat confusing, as the active ponds in this area were initially identified as High Ponds 1 and 2, but in this report are essentially referred to as Ponds 2 and 3.

Response:
Additional ponds were not discovered during the MW03S area investigation. The ponds referred to as "High Ponds 1 and 2" in the *Environmental Indicators* Report and "Ponds 2 and 3" in the *MW03S Area Investigation* Report are the same ponds. These ponds will be referred to as "Ponds 2 and 3" in subsequent reports.

Comment 3:
Page 11 of the Corrective Measures Study indicates that the wastewater treatment ponds are active and regulated under the Clean Water Act. This statement is not correct, as only the discharge from these ponds is regulated by the Clean Water Act. [U.S. EPA Note: see 40 CFR 261.4(a)(2)].

Response:
ENVIRON agrees that the ponds are active and the discharge is regulated by the Clean Water Act.

Comment 4:
No information has been provided regarding the amount of sludge present in High Ponds 2, 3, 7 to 20, Middle Ponds 1 to 6, and Low Ponds 7, 8. As a substantial amount of sludge is likely present in each of these ponds, it is not appropriate to evaluate the contaminant levels present in the sludge in each pond suing TACO as: (1) the ponds are essentially being used as disposal impoundments; and (2) sludge is not soil and TACO" is used to develop remediation objectives for soil, not sludge.

Response:
ENVIRON is not attempting to address any sludge from the active ponds using TACO regulations.

Comment 5:
The Illinois EPA has determined that it cannot approve the 35 Ill. Adm. Code 742, Tier 2 Evaluation for groundwater in the vicinity of the WWTP lagoons and monitoring well MW03S. IEPA has determined that a 35 Ill. Adm. Code Part 742 risk assessment is not applicable to the site due to the following: (1) soil migration to groundwater equations are for soil and groundwater, not sludges, (2) the WWTP sludges constitute waste left in place. Part 742 risk assessment cannot be applied to SWMUs with waste left in place, (3) there is no engineered barrier in place at any of the WWTP lagoons preventing the migration of contamination from sludges to groundwater. Existing groundwater impacts demonstrate that soil in the vicinity of the wastewater treatment plant has not prevented contamination of the shallow aquifer regardless of its characterization as a "Type E" soil, (4) the WWTP sludges are clearly situated below the water table providing direct contact of contaminated waste with groundwater, and (5) WWTP lagoons 2 and 3 still actively accumulate waste. These units are unlined and thus provide a potential ongoing source of groundwater contamination.

Response:
As presented in the *MW03S Area Summary Report*, the WWTP lagoons are no longer believed to be the source of contamination at the MW03S area. Therefore use of the 35 Ill. Adm. Code 742, Tier 2 Evaluation is not necessary for the groundwater in the vicinity of the WWTP lagoons and monitoring well MW03S.

Please contact Ron Hutchens or me with any questions that you might have.

Sincerely,

ENVIRON International Corporation

Barbara R. Coughlin, Ph.D.
Senior Manager

cc: Mr. John Watson - Gardner Carton & Douglas
Mr. Jason Pontnack - Lyondell Chemical Company
Mr. David Guier - Lyondell Chemical Company
Mr. Michael Neal – Lyondell Chemical Company
Mr. Jim Gooris – Lyondell Chemical Company
Mr. Jeff Turner - Illinois EPA, Champaign
Tuscola Public Library

ENVIRON

October 19, 2004

Mr. Peter R. Ramanauskas
U.S. Environmental Protection Agency
77 West Jackson Boulevard (DW-8J)
Chicago, IL 60604-3590

Re: MW03S Area Summary Report
ILD005078126
Millennium Petrochemicals, Inc., Tuscola, Illinois

Dear Mr. Ramanauskas:

On behalf of Millennium Petrochemicals, Inc., ENVIRON International Corporation is hereby submitting two copies of this MW03S Area Summary Report for the Tuscola Facility.

If you have any questions or comments on the reports, please contact me or Ron Hutchens at (847) 444-9200.

Sincerely,

ENVIRON International Corporation

Barbara R. Coughlin, Ph.D.
Senior Manager

BRC:rms
R:\Client Project Files\Millennium_Tuscola 21-12080A\MW03S Data\Report\MW03S Report ltr_101904.doc

Enclosures

cc: Michael Bramnick – MPI (two copies)
John Watson – Gardner Carton & Douglas (one copy)
David Guier – Lyondell (one copy)
Jason Pontnack – Equistar (one copy)
Jeff Turner – Illinois EPA (one copy)
Tuscola Public Library (one copy)

ENVIRON

August 20, 2004

Mr. Peter R. Ramanauskas
U.S. Environmental Protection Agency
77 West Jackson Blvd. (DW-8J)
Chicago, IL 60604-3590

RE: RCRA Facility Investigation Report
Corrective Measures Workplan
ILD005078126
Millennium Petrochemicals, Inc., Tuscola, Illinois

Dear Mr. Ramanauskas:

On behalf of Millennium Petrochemicals, Inc., ENVIRON International Corporation is hereby submitting two copies each of this RCRA Facility Investigation Report and Corrective Measures Workplan for the Tuscola facility.

If you have any questions or comments on the reports, please contact me or Ron Hutchens at (847) 444-9200.

Sincerely,

ENVIRON International Corporation

Barbara R. Coughlin, Ph.D.
Senior Manager

BRC:rms
R:\Client Project Files\Millennium_Tuscola 21-12080A\RFI Work Plan\RFI WorkPlan ltr_082004.doc

Enclosures

cc: Mr. Michael Bramnick – Millennium (two copies)
John Watson Esq. – Gardner Carton & Douglas (one copy)
Mr. David Guier – Lyondell (one copy)
Mr. Jason Pontnack – Equistar (one copy)
Mr. Jeff Turner – Illinois EPA (one copy)
Tuscola Public Library (one copy)

217/278-5800
FAX: 217/278-5808

August 2, 2004

Equistar Chemicals, LP
Attn.: Mr. Jim Gooris, HSE Manager
625 E. US Highway 36
Tuscola, IL 61953

Re: 0418080002 — Douglas County
Tuscola/Equistar Chemicals, LP
Compliance File

Dear Mr. Gooris:

On July 27, 2004, an inspection of the above-referenced site was conducted by Jeff Turner representing the Illinois Environmental Protection Agency. The purpose of this inspection was to determine your facility's groundwater monitoring wells' compliance with standards adopted under the Illinois Environmental Protection Act, 35 Ill. Adm. Code Part 807, and your permit, 2002-030-SP.

No violations are cited as a result of this inspection. However, these recommendations are provided:

1. RFI well MW-03D had a half-inch gap between the outer protective casing and the surface seal. It should be sealed to prevent infiltration of precipitation and surface water.
2. RFI well MW-14 should have a small drain hole drilled near the bottom of the outer protective casing (approximately an inch above the cement surface seal).
3. RFI wells MW-06S and MW-06D had air-tight inner caps with no vents. These caps should be drilled through to allow the wells to "breathe" (maintain pressure equilibrium with the atmosphere).
4. Replace the protective guard posts around 807 well G124.
5. Exhume the cement surface seal of 807 well G111 so that it may be inspected.
6. Equip flush-mount 807 well G108 with a locking inner cap.
7. Repaint and relabel the outer protective casings of all monitoring wells at the facility.
8. There are many wells and piezometers at the facility that do not appear to be part of any program. It is necessary to maintain their condition to prevent contaminants from the surface from entering the aquifer. It should be determined whether these wells are still part of a regulatory program. If they are not, and they are unlikely to be used, they should be properly sealed and abandoned. Please coordinate any well abandonments with the Douglas County Health Department at 253-4137.

0418080002—Douglas County
Tuscola/Equistar Chemicals, LP
ILD005078126
Compliance File

August 2, 2004

For your information, a copy of the inspection report is enclosed. Should you have any questions, please contact Jeff Turner, P.G. at 217/278-5800.

Sincerely,

Richard A. Gerard, Manager
Champaign Regional Office
Bureau of Land

RAG:JST
Enclosure

bc: Bureau File
Champaign Region File
ec: Gwenyth Thompson

5-13-04
EQUISTAR Mtg.

Name	Organization	Phone #	E-MAIL
Allen Debus	U.S EPA	312-886-6186	Debus.Allen@epa.gov
Peter Ramanauskas	US EPA	312-886-7890	ramanauskas.peter@epa.gov
Barbara Conghlin	ENVIRON	847-444-9200	bconghlin@environcorp.com
RON HUTCHENS	ENVIRON	847-944-9200	RHUTCHENS@ENVIRONCORP.COM
John Watson	GCD	312.569.1446	jwatson@gcd.com
DAVID GUIER	EQUISTAR	713-309-7794	DAVID.GUIER@LYONDELL.COM

ENVIRON

March 31, 2004

Mr. Peter R. Ramanauskas
United States Environmental Protection Agency
77 W. Jackson Boulevard
Mail Code: DW-8J
Chicago, IL 60604-3507

Re: Quarterly Sampling Results
MW03S Area Investigation
ILD005078126
Millennium Petrochemicals, Inc.
Tuscola, Illinois

Dear Mr. Ramanauskas:

The monitoring wells MW03S, MW10, and MW12 through MW16 were sampled on February 26, 2004 pursuant to the USEPA-approved plan set forth in Millennium's letter report to the Agency dated July 29, 2003. Detections of volatile organic compounds (VOCs) are presented in the attached table. Laboratory data reports can be provided upon request.

The fourth quarterly sampling event will occur in April/May 2004. After completion of the fourth event, a report summarizing the data from the four sampling events along with conclusions and recommendations will be prepared.

Please contact me or Ron Hutchens with any questions regarding the enclosed data.

Sincerely,

ENVIRON International Corporation

Barbara R. Coughlin, Ph.D.
Manager

BRC:alb
R:\Millennium Tuscola_21-12080A\MW03S\Feb 2004 MW03 area data\Ramanauskas_ltr_033104.doc

cc: Mr. Michael Bramnick – Millennium Chemicals, Inc.
Mr. John Watson – Gardner-Carton & Douglas
Mr. Jason Pontnack – Equistar Chemicals, L. P.
Mr. David Guier – Lyondell Chemical Company
Mr. Jeff Turner – Illinois EPA, Champaign
Tuscola Public Library

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www.environcorp.com

Allen Debus

03/05/04 09:22 AM

To: Peter Ramanauskas/R5/USEPA/US@EPA
cc: Wayne Whipple/R5/USEPA/US@EPA
Subject: Equistar vocs data

Peter:

After perusing the Equistar data, I'm left with the following thoughts..

First, I see it basically the way we discussed matters on Tuesday before you left on your trip. Samples could be rerun using 8260B purge and trap, *undiluted* to see what signals were detected for each of the BTEX compounds, (or as one CRL staff person suggested on Wednesday, perhaps this data may already exist & we may only have to ask for it). Incidentally, I presume the samples were processed using method 5035 for the VOCs too. If not and they used methanol preservation instead, then you would ordinarily expect higher reporting limits. You and I also discussed using a gas chromatography method such as 8021B, although if there is much hydrocarbon present, this could interfere with the analysis too. It could be tried experimentally, however, to see if there is any benefit.

Besides immunoassay techniques for TPH, we discussed further characterization of the petroleum hydrocarbon fraction using method 8015 for deisel or gasoline range organics. While this would give us a better handle on what the nature of the matrix interferent is (which may be the primary pollutant as well), it won't give you more information on the BTEX situation - which is that you would like to know presence or absence at lower detection limits than reported for cases where dilution was performed. Afterward, when I discussed this possibility with Wayne Whipple of CRL, he opined that the hydrocarbon could be a jet fuel which might have low amounts of BTEX (and possibly relatively lower PAH levels than deisel fuel). Dr. Whipple seconded that hydrocarbon characterization might be handy information to have.

If samples are rerun, Dr. Whipple wasn't in favor of some options I bounced off him for consideration. These included using SIM for lower BTEX detection or use of vacuum distillation (i.e. rather than heated purge and trap). So, let's drop them from further consideration. However, Whipple suggested that a fairly non-conventional method (i.e. with respect to what most commercial labs would perform in this situation) could be tried. This would be an MS-MS technique employing an ion trap; the CRL published a paper on this method last year. While he discussed this quite a bit, I won't digress here. Dr. Whipple said he would be willing to participate in a conference call if you wanted to arrange something on this.

That's all for now.

Allen

ENVIRON

January 16, 2004

Mr. Peter R. Ramanauskas
USEPA
77 West Jackson Boulevard
Mail Code: (DW-8J)
Chicago, IL 60604-3507

Re: Quarterly Sampling Results
MW03S Area Investigation
ILD005078126
Millennium Petrochemicals, Inc.
Tuscola, Illinois

Dear Mr. Ramanauskas:

The monitoring wells MW03S, MW10, and MW-12 through MW-16 were sampled on August 8, 2003 and November 5, 2003 pursuant to the USEPA approved plan set forth in Millennium's July 29, 2003 letter report submitted to the Agency. Detections of volatile organic compounds (VOCs) are presented in the attached table. The third quarter sampling event for these wells will occur in January/February 2004. The fourth quarter sampling event will occur in April/May 2004.

After completion of the fourth event, a report will be prepared that summarizes all the data and presents conclusions and recommendations based on the data analysis.

Please contact Ron Hutchens or me with any questions that you might have.

Sincerely,

ENVIRON International Corporation

for

Barbara R. Coughlin, Ph.D.
Manager

BRC:alb
R:\Client Project Files\Millennium_Tuscola 21-12080A\MW03_EPA letter_011604.doc

cc: Mr. Michael Bramnick – Millennium Chemicals, Inc.
Mr. John Watson, Gardner – Carton & Douglas
Mr. Jason Pontnack – Equistar Chemicals, L.P.
Mr. David Guier – Lyondell Chemical Company
Mr. Jeff Turner – Illinois EPA, Champaign
Tuscola Public Library

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www.environcorp.com

Peter Ramanauskas
07/09/03 11:44 AM

To: mnienkerk
Subject: Sample info

Hi Monte,

As mentioned during our meeting, I checked with our chemist regarding any additional information we would like related to the VOC samples from the MW03S project. In addtion to the information I asked for during the meeting, please include copies of the sample receipt log (i.e. sample custodian), chain of custody, and sample run log indicating when samples were analyzed versus their date of collection.

Thanks!
Peter

Allen Debus
07/08/03 01:41 PM

To: Peter Ramanauskas
Subject: Equistar

Peter:

From what I could glean in documentation in the binder you loaned to me, I think Equistar may have followed an essentially correct procedure for collecting VOCs groundwater samples. While they could have added a turbidity field measurement, they had 3 important parameters 'in play' gauging when groundwater was 'stabilized' as a result of purging, prior to sample collection. As added proof, you could ask to examine the field logs showing what the pH, temperature and spec. conductance readings were, leading to their conclusion that well water was stabilized & triggering the VOCs gw sample collection activity. Also, they seem to have had a correct idea of what our sample preservation and holding time guidelines are for such samples.

If you wanted to be doubly sure you could ask them for copies of the sample receipt log (i.e. sample custodian), which would show the temperature at which samples were received based on a temperature blank reading, and also the chain of custody & sample run log indicating when samples were analyzed, versus their date of collection. There would also be notes indicating whether these samples were pH adjusted properly using HCL (i.e. they should have been pre-preserved w/HCL).

Regarding 'what else' we could ask for - beyond what was in your list in the 2nd par. of your 7/1 note, maybe chain of custody records & anything else stated above.

Allen

Peter Ramanauskas
07/01/03 02:45 PM

To: Allen Debus
Subject: Equistar

Hi Allen,

When you have a moment could you look at the monitoring well sampling procedures and SOP for the Equistar/Millennium project particularly with respect to VOCs? I have also asked them to send me an SOP for the methods of soil sampling and analysis for VOCs and will pass that along when it comes in. They verbally mentioned Method 5035 (Field Preservation Method).

Finally, regarding your question on some documentation on sample shipping and storage for VOCs, they mentioned that they did not exceed a holding time for the samples even though there was a longer period between sampling and analysis. As for documentation, I requested info from the lab on those sample batches such as the temperature the samples arrived at the laboratory and how they were stored at the lab. If there are any other specific items you'd like to see in terms of documentation, please let me know and I'll pass it along to them for action.

Thanks!
Peter

chain of custody forms

Allen Debus
06/19/03 02:03 PM

To: Peter Ramanauskas
Subject: EQUISTAR.....DATA

Peter:

I paged through Appendix B of the 5/15/03 Equistar data report. The level of information provided makes it very difficult to fully 'validate' the data. I examined the Case narratives for soil & groundwater samples and reviewed their standard QC summary sheets.

Overall, it sounds as if there is much gasoline and halogenated VOCs in site media. (I wouldn't be surprised if TPH and MTBE (methyl tert butyl ether) would be detected in significant quantities.... maybe even lead too (as in tetraethyl lead).

For both groundwater and soil samples, method blanks looked clean. However, there were some difficulties with matrix spiking samples. Several constituents had high out of range recovery values and in some cases there was poor precision between the MS and MSD samples. For samples sent to Lancaster labs, the LCS data appeared to pass acceptance criteria.

There appears to be an excessively long period between dates of sampling to the date of analysis for soil VOCs samples - usually in the range of 9 days. Because these samples are time-sensitive, it would be helpful to know (with suitable documentation) how the samples were shipped and stored during this interval. BTEX compounds particularly biodegrade quickly, and this is a site where decisions will have to be made on the basis of BTEX results and associated QC quality.

Allen

Meeting w/ Equistar Tuscola 7/3/02

re: CMS and other newly discovered areas.

Participants

Peter Ramanauskas
Monte Nienkirk – Clayton Group Services
Ron St. John
Christopher Bland - Equistar
~~Rick Ferguson - Equistar~~

Site visit
No August 5th week.

Evaluate

IEPA GM2 Plume

GW assessment report in 2-3 wks.
Metals background set by IEPA - will send me copies

* IEPA Bureau of Water would close WWTP lagoons - talk to them.

* I will work w/ IEPA on Taco Tier 2 modelling.
↳ Check w/ Clayton if need be.

* Noted CA750 for Plume at MW03S.
* Check w/ TACO Tier 2 applicability
* Define source.
* Delineate Plume.

* Background is shallow Class II.

* Monte will look at Metals exceedences over Class I at 65, 75, 15. and other wells 9 of 13.

* No seeps along WWTP bank.

Noted other general comments - email them.

Check w/Mario on HH RA documentation.

Site Remediation Personnel use TACO more.

*GM2 wells have not been installed.
IEPA review/approval may take time.
By regulation is 3 mo. review. But more time needed.

Peter Ramanauskas
06/25/03 03:50 PM

To: mnienkerk
Subject: Equistar Data

Hi Monte,

I asked our chemist to look at the MW03S report data. One comment he had was that there appears to be an excessively long period between dates of sampling to the date of analysis for soil VOC samples, usually in the range of 9 days. Because these samples are time-sensitive, it would be helpful to know (with suitable documentation) how the samples were shipped and stored during this interval.

A couple of other questions from me:

1) The report mentions soil samples that were analyzed as soil but appeared to be sampled from a saturated zone/capillary fringe. What effects would you expect to see as a result? Were these taken with an Encore sampler?

2) Section 2.6.1 states that 1,2 - DCA, TCE, and VC reporting limits are higher than TACO Tier 1 SROs. Why were only these certain RLs elevated? Others in the same group seem to have low RLs.

Thanks,
Peter

Peter Ramanauskas

06/10/03 10:39 AM

To: Allen Debus/R5/USEPA/US
cc:
cc:
Subject: Equistar

Hi Allen,

I have an Equistar report that I'd like you to look over with respect to data presented. A couple of points in particular that I noticed in my review were:

1) There don't seem to be any case narratives for the data presented in Appendix B to gauge how well analysis went.

2) The report mentions soil samples that were analyzed as soil, but appeared to be sampled from a saturated zone/capillary fringe. What would the effects of that be on the data?

3) Section 2.6.1 states that 1,2 - DCA, TCE, and VC reporting limits are higher that TACO Tier 1 SROs (screening). Why were only these certain RLs elevated? Others in the same group seemed to have good, low RLs.

I've left this document on your chair. Please let me know what you think.

Thanks!
Peter

6/3/03

Equistar/Millennium Petrochemicals

Review of MW035 Area Investigation Report May 15, 2003

(Additional soil/groundwater investigation near WWTPs lagoons)

---

* Are there Case Narratives for the data presented in Appendix B? Ask Allen for what he'd like to see.

* Will soil samples that are collected and analyzed from the capillary fringe/saturated zone be affected?

* Sec. 2.6.1 states 1,2-DCA, TCE, and VC reporting limits are higher than ~~[illegible]~~ TACO Tier 1 SROs. Why were only these certain RLs elevated? (See 1,2-DCA) others had good, low RLs.

Peter Ramanauskas
06/03/03 02:50 PM

To: Jeff.Turner
Subject: Equistar Tuscola

Hi Jeff,

How have you been? Hope all is going well for you. Wanted to touch base with you about the latest reports from Millennium on the Equistar Tuscola plant.

You've probably received their Assessment of Additional Areas of Concern workplan to look at those additional former operational areas. I'm working with them to tweak a few things in there, but wanted to ask you about their Chemical Loading Area. They looked into that area a bit more and believe that it is still considered an active area and therefore not an AOC that they need to investigate under RCRA Corrective Action.

In looking at this area and their information, I tend to agree with them. If these were product tanks, they wouldn't have been RCRA regulated to begin with. Now that they removed the caustic tank and have converted the remaining two (benzene and olefins) tanks to < 90 day storage, they have to comply with 40 CFR 262.34(a)(1)(ii) which invokes the closure requirements of 40 CFR 265.197 for tanks. I believe IEPA has authorization for this part of the program and would have oversight of this. Your thoughts?

You've probably also received the report for the additional investigation of the soil/groundwater area near the WWTP lagoons and MW03S. It looks like we've got an organics problem there. I haven't looked into the report with much depth, but they plan to add 4 new monitoring wells to show that the plume is not migrating. This is all well and good, but they also state that remediation is not necessary even though values exceed TACO Tier 1 Class II GROs as they have performed a modelling excercise under TACO. It also appears that the source is the closed (and possibly existing) WWTP lagoons, but they say the areas continue to undergo natural attenuation so no remediation is necessary. I'll be looking at this closely. Do you know if there is someone at IEPA who would be able to review this portion of the document and provide comment on it?

Thanks for your help. I'll email you a copy of my comments (and Millennium's responses) on the investigation of the demolition areas.

Peter

"Bland, Christopher S." <Christopher.Bland@Equistarchem.com>

03/15/02 08:31 AM

To: Peter Ramanauskas/R5/USEPA/US@EPA
cc:
Subject: RE: Question

Hi Peter,

Good to hear from you again. I would like to ask for a little bit of time to reply to this e-mail to respond to you formally in a letter. Would that be OK?

Thanks!

Chris Bland
TCO HSE Manager
christopher.bland@equistarchem.com
Phone: 217-253-1575

> -----Original Message-----
> From: Ramanauskas.Peter@epamail.epa.gov
> [SMTP:Ramanauskas.Peter@epamail.epa.gov]
> Sent: Friday, March 08, 2002 4:06 PM
> To: Bland, Christopher S.
> Subject: Question
>
> Hi Chris,
>
> Long time no speak. Hope all is going well for you.
>
> I have a question regarding the remedial investigation ongoing at your
> facility under the voluntary agreement between MPI and USEPA.
> Specifically, I just wanted to verify with you that, based on available
> site records that Equistar provided to MPI, have all potential areas of
> concern for current and past hazardous waste management been addressed
> by work completed under the voluntary agreement to date?
>
> Please let me know at your earliest convenience.
>
> Thanks much!
> Peter

Peter Ramanauskas
11/06/2000 12:05 PM

To: MNienkerk
Subject: RFI Comments

Hello Monte,

I've taken a quick look at the RFI workplan you sent me and have some questions/comments that are in the attached wordperfect document. Please forward this to Ron as I am working from home today & do not have my updated address book here.

If some of the questions raised would be addressed through the addendums to the plan that are mentioned, that's fine. You can respond to them as you see fit (via letter, email, etc.).

Please let me know if you have any questions.

Thanks!
Peter


Equistar RFI Comment

Peter Ramanauskas To: Allen Debus
07/01/03 02:45 PM Subject: Equistar

Hi Allen,

When you have a moment could you look at the monitoring well sampling procedures and SOP for the Equistar/Millennium project particularly with respect to VOCs? I have also asked them to send me an SOP for the methods of soil sampling and analysis for VOCs and will pass that along when it comes in. They verbally mentioned Method 5035 (Field Preservation Method).

Finally, regarding your question on some documentation on sample shipping and storage for VOCs, they mentioned that they did not exceed a holding time for the samples even though there was a longer period between sampling and analysis. As for documentation, I requested info from the lab on those sample batches such as the temperature the samples arrived at the laboratory and how they were stored at the lab. If there are any other specific items you'd like to see in terms of documentation, please let me know and I'll pass it along to them for action.

Thanks!
Peter

Peter Ramanauskas
11/26/01 01:32 PM

To: mnienkerk@claytongrp.com, rstjohn@claytongrp.com
cc:
Subject: RFI Report Questions

Gentlemen,

I'm making my way through the RFI Report/EI Determination and have a few questions I'd like to ask. I've noted them below. At this point, I'm basically looking over the information in the document in order to concur with your EI determinations.

Please respond to these comments/questions:

1) I cannot seem to find the data for July 2001 sediment sampling from the Kaskaskia River Sediment (SS04) and the outlet channel (SS06). Also, is there data available from the latest rounds of groundwater sampling associated with the landfills (i.e., after April 2000?)

2) Tables 1 & 3 list the RFI analytical suites for soil, sludge, sediment, surface water, and ground water. However, the tables in Appendix H do not show the results for all constituents listed in Tables 1 & 3. Please supply the missing consitutent data from the analytical list noted in Tables 1 & 3.

3) Were there any elevated PID readings during soil sampling noted in Section 2.3.2. on page 2-7?

4) Section 4.1, page 4-2, notes "Concentration results were compared to most stringent ingestion and inhalation values in Table 16." Yet, for example, for chloroform, the maximum detected concentration was 0.34 ppm in the high ponds exceeding the most conservative screening value of 0.3 ppm but not noted as a human health COC.

Similarly, for the river sediments, arsenic, beryllium, and chromium exceed human health screening levels in Table 16, but they are not noted as a human health COCs. For example, beryllium is detected at 0.94 ppm in SS04 exceeding the most conservative screening value of 0.1ppm for ingestion.

Also, for the intermittent stream sediment, arsenic exceeds the human health screening numbers noted in Table 16, but it is not identified as a human health COC.

5) Page 3-1 makes reference to the excavated and closed high ponds (numbers 3 through 6). Was there any confirmation sampling done after excavation? Were the areas backfilled and, if so, with what type of material?

6) It would be helpful to include the rationale for sampling certain private wells near the facility (e.g., 19, 21, M, N, etc.) but not others (e.g., 8, 11, 18, C, etc.)

7) Please clarify what is meant by landfill leachate seeps as noted in the report. Are there any seeps present that become surface runoff or do such references in the text of the report refer to the leachate wells? Also, Appendix M-3 shows data for leachate wells, L3 through L7 while

Appendix M-4 only shows leachate well data for L3 & L4. Where is the data for L5, L6, & L7?

Thanks & please let me know if you have any questions!
Peter

Peter Ramanauskas

12/05/01 10:05 AM

To: mnienkerk@claytongrp.com, rstjohn@claytongrp.com
cc: Cho.Hak@EPAMAIL.EPA.GOV, Jeff.Turner@epa.state.il.us
Subject: Environmental Indicators

Gentlemen,

In looking over the EI report, it seems that we're in relatively good shape for the CA725 Human Health Indicator. I still need to see the responses to my comments sent last week.

Regarding the CA750 - Groundwater Migration Controlled: in looking through the report, it seems that the plume is still being delineated (you are still in the process of setting up a GMZ for the landfills). So I don't think you've shown that CA750 has been achieved. What is the status of the additional shallow groundwater assessment noted on page 17 of the Addendum to Supplemental Permit Application Log No. 2000-270 (May 14, 2001) sent to IEPA? I think that once this work has been done and a GMZ identified and monitored you will be in a much better position to show that groundwater migration has been controlled.

Some other questions/comments that I have developed in my review of the groundwater situation at Equistar:

1) The Class I & II screening values for Chloroform noted in the second paragraph of page 4-15 should read 0.2 ug/L and 1.0 ug/L respectively.

2) How certain are you that MW03S and MW10 are screened in the same aquifer? In looking at the boring logs found in Appendix C, MW03S is screened through a saturated sand layer described as "black, saturated, fine, some medium to coarse sand & gravel" while MW10 is screened through 2 wet silty sand layers described as "light brown, wet, medium with clay, some fine gravel".

3) The second to last sentence on page 5-13 states: "Therefore, the detection of these inorganic constituents are most likely related to the landfills on the site." This seems to imply that the landfill plume has migrated as far as MW05S. Similarly on page 5-15, this is stated for Manganese in the 4th paragraph. Does Equistar/Clayton believe that the landfill plume has migrated to such an extent?

4) Please explain why the deep assessment monitoring well data are being compared to Class II standards when the deep aquifer has been classified as a Class I aquifer (see Appendix M-4 page 3 of 3)? For example, Manganese has been detected at 170 ug/L in well G309 which exceeds the Class I standard of 150 ug/L. How will the deep aquifer be addressed?

Please get back to me on these and my previous batch of comments. Please contact me if you have any questions or would like to schedule a meeting to discuss these issues.

Thanks,
Peter

3140 Finley Road
Downers Grove, IL 60515
630.795.3200
Fax 630.795.1130

Clayton GROUP SERVICES

November 6, 2001

Garrett Township Cemetery Association
c/o Robert E. Romine
520 E. Co. Rd., 1050 N
Tuscola, Illinois 61953

Dear Mr. Romine:

As you are aware, on September 5, 2001, we collected a water sample from a water supply well located at the Cartwright Cemetery and Bache Memorial Chapel. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Route 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting" limit column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

ug/L = micrograms per liter; this is equivalent to parts per billion.
mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board for groundwater that serves as a drinking water supply. The Douglas County Health Department can provide you with information concerning naturally occurring compounds found in groundwater.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll

free at 888-369-0200. You may also contact EPA's Project Manager for the facility investigation, Peter Ramanauskas. He can be reached at USEPA – Region 5, 77 West Jackson Blvd. (DW-8J), Chicago, Illinois 60604-3590, or by telephone at 312-886-7890.

Sincerely,

Monte Nienkerk

Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

cc: Peter Ramanauskas, USEPA

Enclosures: Analytical Results

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	19-010905
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/05/2001 3:25:00 PM
Lab ID:	01090146-002A	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
Rptap(ppb) mcL (ppb)						
GC/MS VOLATILES; METHOD EPA 8260B						Analyst: **DRS**
Acetone 610	ND	100		µg/L	1	09/10/2001 9:29:00 AM
Benzene 0.41 5ppb	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Bromodichloromethane 0.18 –	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Bromoform 8.5 80	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Bromomethane 8.7 –	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
2-Butanone –	ND	50		µg/L	1	09/10/2001 9:29:00 AM
Carbon Disulfide 1000 –	ND	50		µg/L	1	09/10/2001 9:29:00 AM
Carbon tetrachloride 0.17 5ppb	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Chlorobenzene 110 –	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Chloroethane 4.6 –	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Chloroform 0.16	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Chloromethane 1.5	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Dibromochloromethane 0.13	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
1,2-Dichlorobenzene 370	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
1,3-Dichlorobenzene 5.5	ND	5.0		µg/L	1	09/10/2001 9:29:00 AM
1,4-Dichlorobenzene 0.5	ND	5.0		µg/L	1	09/10/2001 9:29:00 AM
1,1-Dichloroethane 810	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
1,2-Dichloroethane 0.12	ND	5.0		µg/L	1	09/10/2001 9:29:00 AM
1,1-Dichloroethene 0.046	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
cis-1,2-Dichloroethene 61	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
trans-1,2-Dichloroethene 120	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
1,2-Dichloropropane 0.16	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
cis-1,3-Dichloropropene 0.0031	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
trans-1,3-Dichloropropene –	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Ethylbenzene 1300	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
2-Hexanone –	ND	50		µg/L	1	09/10/2001 9:29:00 AM
4-Methyl-2-Pentanone –	ND	50		µg/L	1	09/10/2001 9:29:00 AM
Methylene Chloride 4.3	ND	5.0		µg/L	1	09/10/2001 9:29:00 AM
Styrene 1600	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
1,1,2,2-Tetrachloroethane 0.055	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Tetrachloroethene 1.1	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Toluene 720	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
1,1,1-Trichloroethane 790	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
1,1,2-Trichloroethane 0.2	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Trichloroethene 1.6	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Vinyl Acetate 410	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Vinyl Chloride 0.02	ND	1.0		µg/L	1	09/10/2001 9:29:00 AM
Xylenes, Total 1400	ND	3.0		µg/L	1	09/10/2001 9:29:00 AM

Qualifiers:

- ND - Not Detected at the Reporting Limit (RL).
- J - Analyte detected below the Reporting Limit
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	19-010905
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/05/2001 3:25:00 PM
Lab ID:	01090146-002B	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
SULFIDE; METHOD EPA 376.1						Analyst: **MJR**
Sulfide	ND	1.0		mg/L	1	09/10/2001

Qualifiers:	ND - Not Detected at the Reporting Limit (RL).	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below the Reporting Limit	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	19-010905
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/05/2001 3:25:00 PM
Lab ID:	01090146-002C	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
RT PRGTap						
CYANIDE; METHOD EPA 335.2						Analyst: **MJR**
Cyanide 6.2 ug/L (HCN)	ND	0.010		mg/L	1	09/14/2001
Next is 180 ppb (CuCN)						

Qualifiers:

- ND - Not Detected at the Reporting Limit (RL).
- J - Analyte detected below the Reporting Limit
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	19-010905
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/05/2001 3:25:00 PM
Lab ID:	01090146-002D	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
TOTAL DISSOLVED SOLIDS; METHOD EPA 160.1						Analyst: **MJR**
Total Dissolved Solids (Residue, Filterable)	470	5.0		mg/L	1	09/11/2001
TOTAL SUSPENDED SOLIDS; METHOD EPA 160.2						Analyst: **MJR**
Suspended Solids (Residue, Non-Filterable)	ND	1.0		mg/L	1	09/10/2001

Qualifiers:	ND - Not Detected at the Reporting Limit (RL).	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below the Reporting Limit	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	19-010905
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/05/2001 3:25:00 PM
Lab ID:	01090146-002E	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
CHEMICAL OXYGEN DEMAND; METHOD SM 5220 D						Analyst: **MJR**
Chemical Oxygen Demand	12	10		mg/L	1	09/11/2001
AMMONIA-N, ISE; METHOD 350.3						Analyst: **MJR**
Nitrogen, Ammonia (As N)	ND	1.0		mg/L	1	09/11/2001

Qualifiers:	ND - Not Detected at the Reporting Limit (RL).	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below the Reporting Limit	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	19-010905
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/05/2001 3:25:00 PM
Lab ID:	01090146-002F	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
ICP METALS; WATER: METHOD EPA 6010B						Analyst: CAW
Aluminum	ND	60		µg/L	1	09/12/2001
Boron	1,600	50		µg/L	1	09/12/2001
Calcium	1,600	500		µg/L	1	09/12/2001
Iron	140	100		µg/L	1	09/12/2001
Magnesium	510	90		µg/L	1	09/12/2001
Manganese	ND	50		µg/L	1	09/12/2001
Potassium	ND	500		µg/L	1	09/12/2001
Sodium	190,000	500		µg/L	1	09/12/2001
ICP/MS METALS; METHOD EPA 6020						Analyst: RS
Antimony	ND	5.0		µg/L	1	09/14/2001
Arsenic	4	5.0	J	µg/L	1	09/14/2001
Barium	7.6	5.0		µg/L	1	09/14/2001
Beryllium	ND	1.0		µg/L	1	09/14/2001
Cadmium	0.4	0.50	J	µg/L	1	09/14/2001
Chromium	3	5.0	J	µg/L	1	09/14/2001
Cobalt	ND	5.0		µg/L	1	09/14/2001
Copper	12	5.0		µg/L	1	09/14/2001
Lead	6.3	3.0		µg/L	1	09/14/2001
Nickel	ND	5.0		µg/L	1	09/14/2001
Selenium	4	5.0	J	µg/L	1	09/14/2001
Silver	ND	0.50		µg/L	1	09/14/2001
Thallium	ND	5.0		µg/L	1	09/14/2001
Vanadium	ND	5.0		µg/L	1	09/14/2001
Zinc	20	10		µg/L	1	09/14/2001
MERCURY; METHOD EPA 7470A						Analyst: CAW
Mercury	ND	0.20		µg/L	1	09/11/2001
HARDNESS BY SM 2340B						Analyst: CAW
Hardness, Calcium/Magnesium (As CaCO3)	6.1	0.70		mg/L	1	09/12/2001

Qualifiers:	ND - Not Detected at the Reporting Limit (RL).	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below the Reporting Limit	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	19-010905
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/05/2001 3:25:00 PM
Lab ID:	01090146-002G	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
ANIONS BY IC; METHOD EPA 300.0						Analyst: **CAC**
Chloride	41	1.0		mg/L	1	09/12/2001
Fluoride	ND	0.50		mg/L	1	09/12/2001
Sulfate	ND	1.0		mg/L	1	09/12/2001
SM 2320 B						Analyst: **KAR**
Alkalinity, Total (As CaCO3)	350	1.0		mg/L CaCO3	1	09/12/2001

Qualifiers:

ND - Not Detected at the Reporting Limit (RL).
J - Analyte detected below the Reporting Limit
B - Analyte detected in the associated Method Blank
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S - Spike Recovery outside accepted recovery limits
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3140 Finley Road
Downers Grove, IL 60515
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Fax 630.795.1130

Clayton GROUP SERVICES

November 6, 2001

Mr. Claude Benner
575 E. Co. Rd., 1075 N
Tuscola, Illinois 61953

Dear Mr. Benner:

As you are aware, on September 5, 2001, we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Route 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting" limit column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

ug/L = micrograms per liter; this is equivalent to parts per billion.
mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board for groundwater that serves as a drinking water supply. The Douglas County Health Department can provide you with information concerning naturally occurring compounds found in groundwater.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact EPA's Project Manager for the facility

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Clayton GROUP SERVICES

November 6, 2001

Mr. Gerald Blaudow
556 E. Co. Rd., 1050 N
Tuscola, Illinois 61953

Dear Mr. Blaudow:

As you are aware, on September 6, 2001, we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Route 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting" limit column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

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mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board for groundwater that serves as a drinking water supply. The Douglas County Health Department can provide you with information concerning naturally occurring compounds found in groundwater.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact EPA's Project Manager for the facility

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Clayton GROUP SERVICES

November 6, 2001

Mr./Mrs. John and Linda Gianesin
564 E. Co. Rd., 1050 N
Tuscola, Illinois 61953

Dear Mr./Mrs. Gianesin:

As you are aware, on September 6, 2001, we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Route 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting" limit column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

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mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board for groundwater that serves as a drinking water supply. The Douglas County Health Department can provide you with information concerning naturally occurring compounds found in groundwater.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact EPA's Project Manager for the facility

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Clayton GROUP SERVICES

November 6, 2001

Mr./Mrs. Kenneth and Karen Benner
1125 N. Co. Rd., 560 E
Tuscola, Illinois 61953

Dear Mr./Mrs. Benner:

As you are aware, on September 5, 2001, we collected a water sample from a water supply well located at 580 E. Co. Rd., 1075 N. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Rt. 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting limit" column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

ug/L = micrograms per liter; this is equivalent to parts per billion.
mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board (IPCB) for groundwater that serves as a drinking water supply except for iron. Iron was found at a level of 5,400 ug/L, which is slightly above the limit established by the IPCB of 5,000 ug/L. High levels of iron may cause rusty colored water or rust staining of laundry or bathroom fixtures. Based on samples from other private wells and from other groundwater wells sampled in connection with the investigation of the Equistar site, we do not believe the elevated iron levels in the sample from your well was caused by operations at the site. If the slightly

elevated level of iron is of concern, you may want to discuss this with the Douglas County Health Department.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact USEPA's Project Manager for the facility investigation, Peter Ramanauskas. He can be reached at USEPA – Region 5, 77 West Jackson Blvd. (DW-8J), Chicago, Illinois 60604-3590, or by telephone at 312-886-7890.

Sincerely,

Monte Nienkerk

Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

cc: Peter Ramanauskas, USEPA

Enclosures: Analytical Results

3140 Finley Road
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630.795.3200
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Clayton GROUP SERVICES

November 6, 2001

Ms. Joyce Lewis
560 E. Co. Rd., 1050 N
Tuscola, Illinois 61953

Dear Ms. Lewis:

As you are aware, on September 6, 2001, we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Rt. 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting limit" column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

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mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board (IPCB) for groundwater that serves as a drinking water supply except for iron. Iron was found at a level of 5,100 ug/L, which is slightly above the limit established by the IPCB of 5,000 ug/L. High levels of iron may cause rusty colored water or rust staining of laundry or bathroom fixtures. Based on samples from other private wells and from other groundwater wells sampled in connection with the investigation of the Equistar site, we do not believe the elevated iron levels in the sample from your well was caused by operations at the site. If the slightly

elevated level of iron is of concern, you may want to discuss this with the Douglas County Health Department.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact USEPA's Project Manager for the facility investigation, Peter Ramanauskas. He can be reached at USEPA – Region 5, 77 West Jackson Blvd. (DW-8J), Chicago, Illinois 60604-3590, or by telephone at 312-886-7890.

Sincerely,

Monte Nienkerk

Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

cc: Peter Ramanauskas, USEPA

Enclosures: Analytical Results

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Clayton GROUP SERVICES

November 6, 2001

Mr./Mrs. William and Marilyn Patterson
751 E. Co. Rd., 1050 N
Tuscola, Illinois 61953

Dear Mr./Mrs. Patterson:

As you are aware, on September 5, 2001, we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Rt. 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting limit" column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

ug/L = micrograms per liter; this is equivalent to parts per billion.
mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board (IPCB) for groundwater that serves as a drinking water supply except for lead. Lead was found at a level of 8.7 ug/L, which is above the limit established by the IPCB of 7.5 ug/L. Lead is commonly associated with the plumbing in older homes. Some old homes have lead pipes or connections. It is also found in the solder used with copper plumbing of many homes. We do not believe that the lead is associated with the groundwater, as the lead levels detected in all the other private water well samples (except one) and all of the deep monitoring wells installed around the Equistar site are below the limit established by the IPCB. If the lead found in

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Clayton GROUP SERVICES

November 6, 2001

Mr. Donald Walker
570 E. Co. Rd., 1050 N
Tuscola, Illinois 61953

Dear Mr. Walker:

As you are aware, on September 5, 2001, we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Route 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting" limit column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

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A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board for groundwater that serves as a drinking water supply. The Douglas County Health Department can provide you with information concerning naturally occurring compounds found in groundwater.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact EPA's Project Manager for the facility

the water sample from your well is of concern, you may want to discuss this with the Douglas County Health Department.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact EPA's Project Manager for the facility investigation, Peter Ramanauskas. He can be reached at USEPA – Region 5, 77 West Jackson Blvd. (DW-8J), Chicago, Illinois 60604-3590, or by telephone at 312-886-7890.

Sincerely,

Monte Nienkerk

Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

cc: Peter Ramanauskas, USEPA

Enclosures: Analytical Results

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Clayton GROUP SERVICES

November 6, 2001

Mr./Mrs. Mark and Connie Wesch
610 E. Co. Rd., 1075 N
Tuscola, Illinois 61953

Dear Mr./Mrs. Wesch:

As you are aware, on September 5, 2001, we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Route 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND," then the laboratory did not detect the compound in the sample. The "reporting" limit column indicates the lowest level that the laboratory can report with a good measure of accuracy. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

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A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals, Water, ICP/MS Metals, Mercury, Hardness, Anions, and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board for groundwater that serves as a drinking water supply. The Douglas County Health Department can provide you with information concerning naturally occurring compounds found in groundwater.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc., 3140 Finley Road, Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact EPA's Project Manager for the facility

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	14-010906
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/06/2001 9:15:00 AM
Lab ID:	01090146-007A	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
GC/MS VOLATILES; METHOD EPA 8260B						Analyst: **DRS**
Acetone	ND	100		µg/L	1	09/10/2001 12:27:00 PM
Benzene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Bromodichloromethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Bromoform	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Bromomethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
2-Butanone	ND	50		µg/L	1	09/10/2001 12:27:00 PM
Carbon Disulfide	ND	50		µg/L	1	09/10/2001 12:27:00 PM
Carbon tetrachloride	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Chlorobenzene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Chloroethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Chloroform	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Chloromethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Dibromochloromethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
1,3-Dichlorobenzene	ND	5.0		µg/L	1	09/10/2001 12:27:00 PM
1,4-Dichlorobenzene	ND	5.0		µg/L	1	09/10/2001 12:27:00 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
1,2-Dichloroethane	ND	5.0		µg/L	1	09/10/2001 12:27:00 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
cis-1,2-Dichloroethene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
trans-1,2-Dichloroethene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Ethylbenzene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
2-Hexanone	ND	50		µg/L	1	09/10/2001 12:27:00 PM
4-Methyl-2-Pentanone	ND	50		µg/L	1	09/10/2001 12:27:00 PM
Methylene Chloride	ND	5.0		µg/L	1	09/10/2001 12:27:00 PM
Styrene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Tetrachloroethene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Toluene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Trichloroethene	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Vinyl Acetate	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Vinyl Chloride	ND	1.0		µg/L	1	09/10/2001 12:27:00 PM
Xylenes, Total	ND	3.0		µg/L	1	09/10/2001 12:27:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit (RL).
J - Analyte detected below the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	14-010906
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/06/2001 9:15:00 AM
Lab ID:	01090146-007B	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
SULFIDE; METHOD EPA 376.1						Analyst: **MJR**
Sulfide	ND	1.0		mg/L	1	09/10/2001

Qualifiers:	ND - Not Detected at the Reporting Limit (RL).	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below the Reporting Limit	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	14-010906
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/06/2001 9:15:00 AM
Lab ID:	01090146-007C	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
CYANIDE; METHOD EPA 335.2						Analyst: **MJR**
Cyanide	ND	0.010		mg/L	1	09/14/2001

Qualifiers:	ND - Not Detected at the Reporting Limit (RL).	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below the Reporting Limit	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	14-010906
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/06/2001 9:15:00 AM
Lab ID:	01090146-007D	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
TOTAL DISSOLVED SOLIDS; METHOD EPA 160.1						Analyst: **MJR**
Total Dissolved Solids (Residue, Filterable)	330	5.0		mg/L	1	09/11/2001
TOTAL SUSPENDED SOLIDS; METHOD EPA 160.2						Analyst: **MJR**
Suspended Solids (Residue, Non-Filterable)	1.0	1.0		mg/L	1	09/10/2001

Qualifiers:

- ND - Not Detected at the Reporting Limit (RL).
- J - Analyte detected below the Reporting Limit
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	14-010906
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/06/2001 9:15:00 AM
Lab ID:	01090146-007E	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
CHEMICAL OXYGEN DEMAND; METHOD SM 5220 D						Analyst: **MJR**
Chemical Oxygen Demand	320	200		mg/L	1	09/11/2001
AMMONIA-N, ISE; METHOD 350.3						Analyst: **MJR**
Nitrogen, Ammonia (As N)	ND	1.0		mg/L	1	09/11/2001

Qualifiers:

ND - Not Detected at the Reporting Limit (RL).
J - Analyte detected below the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	14-010906
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/06/2001 9:15:00 AM
Lab ID:	01090146-007F	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
ICP METALS; WATER: METHOD EPA 6010B						Analyst: **CAW**
Aluminum	ND	60		µg/L	1	09/12/2001
Boron	280	50		µg/L	1	09/12/2001
Calcium	58,000	500		µg/L	1	09/12/2001
Iron	5,100	100		µg/L	1	09/12/2001
Magnesium	23,000	90		µg/L	1	09/12/2001
Manganese	10	50	J	µg/L	1	09/12/2001
Potassium	1,600	500		µg/L	1	09/12/2001
Sodium	20,000	500		µg/L	1	09/12/2001
ICP/MS METALS; METHOD EPA 6020						Analyst: **RS**
Antimony	ND	5.0		µg/L	1	09/14/2001
Arsenic	12	5.0		µg/L	1	09/14/2001
Barium	110	5.0		µg/L	1	09/14/2001
Beryllium	ND	1.0		µg/L	1	09/14/2001
Cadmium	ND	0.50		µg/L	1	09/14/2001
Chromium	2	5.0	J	µg/L	1	09/14/2001
Cobalt	ND	5.0		µg/L	1	09/14/2001
Copper	8.3	5.0		µg/L	1	09/14/2001
Lead	2	3.0	J	µg/L	1	09/14/2001
Nickel	3	5.0	J	µg/L	1	09/14/2001
Selenium	5.1	5.0		µg/L	1	09/14/2001
Silver	ND	0.50		µg/L	1	09/14/2001
Thallium	ND	5.0		µg/L	1	09/14/2001
Vanadium	ND	5.0		µg/L	1	09/14/2001
Zinc	5	10	J	µg/L	1	09/14/2001
MERCURY; METHOD EPA 7470A						Analyst: **CAW**
Mercury	ND	0.20		µg/L	1	09/11/2001
HARDNESS BY SM 2340B						Analyst: **CAW**
Hardness, Calcium/Magnesium (As CaCO3)	240	0.70		mg/L	1	09/12/2001

Qualifiers:	ND - Not Detected at the Reporting Limit (RL).	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below the Reporting Limit	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound (TIC)

ANALYTICAL RESULTS

Date: *02-Oct-01*

CLIENT:	CLAYTON GROUP SERVICES	**Client Sample ID:**	14-010906
Work Order No:	01090146	**Tag Number:**	
Project:	15-00116.03/Millenium Petrochemical	**Collection Date:**	09/06/2001 9:15:00 AM
Lab ID:	01090146-007G	**Matrix:**	AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	DF	Date Analyzed
ANIONS BY IC; METHOD EPA 300.0						Analyst: **CAC**
Chloride	19	1.0		mg/L	1	09/12/2001
Fluoride	ND	0.50		mg/L	1	09/12/2001
Sulfate	23	1.0		mg/L	1	09/12/2001
SM 2320 B						Analyst: **KAR**
Alkalinity, Total (As CaCO3)	200	1.0		mg/L CaCO3	1	09/12/2001

Qualifiers:

ND - Not Detected at the Reporting Limit (RL).
J - Analyte detected below the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
T - Tentatively Identified Compound (TIC)

Monte Nienkerk
<MNienkerk@claytongrp.com>

11/01/01 11:18 AM

To: Peter Ramanauskas/R5/USEPA/US@EPA
cc: tdimond@mayerbrown.com, jrice@mpc-usa.com
Subject: Millennium - Private Well Sample Results

Peter:

The results of the 11 private wells that were sampled in September show that no VOCs were detected in any of the samples. With the exception of iron and lead, the inorganic compounds detected are within expected ranges for groundwater or acceptable limits set by the Illinois Pollution Control Board.

Iron was detected in 2 samples (5,100 and 5,400 ug/L) slightly above the IPCB limit of 5,000 ug/L.

Lead was detected in 2 samples (8.7 and 13 ug/L) above the IPCB limit of 7.5 ug/L.

I have drafted 3 letters to be used to transmit the analytical results to the well owners.

Letter A would be sent to the majority, indicating that no VOCs were detected and the inorganics were within expected ranges.

Letter B would be sent to the 2 well owners with the high iron.

Letter C would be sent to the 2 well owners with the high lead.

We would appreciate your review and comment on these letters before we send them to the home owners. Thanks.

Regards,

Monte M. Nienkerk, P.G.
Senior Project Manager
Clayton Group Services, Inc.
3140 Finley Road
Downers Grove, IL 60515

630-795-3207 voice
630-795-1130 fax

mnienkerk@claytongrp.com


15-00116ca068.do

15-00116ca067.do

15-00116ca066.do

Gwenyth Thompson
<Gwenyth.Thompson
@epa.state.il.us>

08/29/01 08:49 AM

To: Peter Ramanauskas/R5/USEPA/US@EPA
cc:
Subject: Equistar

I finished my review of the Equistar application log #2000-270, and recommended approval of the application. We approved their proposal for additional investigation for extent of contamination. We also approved their revised proposal for assessment monitoring constituents. They will also be redeveloping upgradient background.

That's the nuts and bolts of it.

GT

-

The other work is associated. Basically what we're looking at is groundwater impacts from the monofil areas. Sulfate is the major parameter/indicator of concern. To my recollection, the lagoons are not part of that investigation.

They must establish a GMZ, which is simply a 3 dimensional area of the extent of contamination. Concurrent with the GMZ proposal, they must propose a corrective action which is designed to clean up contamination within the GMZ and ensure that there is no spread of contamination beyond the GMZ.

The applications that I have in house are to do some preliminary work in order to establish the GMZ and determine an adequate corrective actions. There is another application related to well placement.

Currently, they are not conducting any corrective action or source control. It sounds as if this (along with extent of contamination) may the type of info that you're interested in?

Gwenyth

>>> <Ramanauskas.Peter@epamail.epa.gov> 08/03/01 10:55AM >>>

Hi Gwenyth,

Thanks for the quick reply! Just to clarify, we don't intend to transfer anything from IEPA to USEPA (sorry to disappoint you :)), we have just entered into a voluntary agreement with them to address remaining site concerns under our RCRA Corrective Action program. Under this agreement, they are required to investigate the Solid Waste Management Units identified in an EPA conducted RCRA Facility Assessment.

As you may or may not know, EPA is tracking 2 environmental indicators for certain high-priority sites. These are "Human Health Exposure Controlled" and "Migration of Contaminated Groundwater Controlled". The areas that they are investigating under this voluntary agreement are the WWTP lagoons and groundwater, an off-site drainage ditch, the Kaskaskia River surface water & sediment, and the closed landfills. This is why I thought it would be a good idea to contact you. Since IEPA has been working with them to control the migration of the contaminated groundwater from the landfills, I would like to see if this would also satisfy our concerns and help meet the "Migration of Contaminated Groundwater Controlled" environmental indicator. It seems that their proposal to create a groundwater management zone with compliance wells would help. Of course, if they discover groundwater problems associated with the WWTP lagoons, that would have to be addressed under our voluntary agreement as well.

Hope that helps give you a better idea of what we're doing. Please let me know if you have any questions & let me know what you think of their plan when you get a chance to review it. Could you also clue me in as to what their "other work" is that you referred to in your email?

Looking forward to talking with you in the future!
Thanks!
Peter

Gwenyth Thompson
<Gwenyth.Thompson@epa.state.il.us>

To: Peter Ramanauskas/R5/USEPA/US@EPA
cc:
Subject: Re: Equistar Tuscola

Gwenyth Thompson
<Gwenyth.Thompson
@epa.state.il.us>

To: Peter Ramanauskas/R5/USEPA/US@EPA
cc:
Subject: Re: Equistar Tuscola

08/02/01 04:26 PM

Hi Peter,

Boy, it would just break my heart to lose this site <g>! Yes, I have the addendum to 270 but have not had a chance to look at it. It will likely be a while until I pick it up. However, I will pin a print out of your e-mail to the application as a reminder to let you know what's going on. They also have two other related applications. But quite honestly, if you guys get the program, they may or may not mean anything to you. I'll re-evaluate that at some distant time (they have much work to do and it will be in 2002 before they get that additional information.)

Thanks
Gwenyth

>>> <Ramanauskas.Peter@epamail.epa.gov> 08/02/01 04:04PM >>>
Hi Gwenyth,

I am a RCRA Corrective Action Project Manager here at EPA Region 5 and we have been working with Equistar/Millennium Petrochemicals (EPA ID: ILD 005 078 126 / IEPA Site Number: 0418080002) under a Voluntary Corrective Action Agreement to address remaining issues at their Tuscola, Illinois facility. Equistar's contractor, Clayton Group Services) has mentoined to me that you are involved with their post-closure groundwater monitoring program for the closed on-site solid waste disposal areas (Permit 1993-004-DE/OP).

We are interested in controlling the migration of contaminated groundwater from the site. Because the facility has done a lot of work under the State's supervision and is continuing to do so, I am interested in the post-closure monitoring work that the facility is doing for IEPA. I believe that this work would also meet our needs under the RCRA Corrective Action program & I think we are all interested in avoiding any duplicative efforts.

I have a copy of the "Addendum to Supplemental Permit Application Log No. 2000-270" dated May 14, 2001. I don't know if you've had a chance to review this, but am curious to know if you have any comments or concerns with their proposed approach here.

Just thought it would be a good idea to keep each other informed!
Thanks!
Peter

Monte Nienkerk
<MNienkerk@claytongrp.com>

To: Peter Ramanauskas/R5/USEPA/US@EPA
cc:
Subject: Re: Screening Levels

08/01/01 10:39 AM

I saw that when I printed out the database. We will screen our data against this database. Thanks.

Monte Nienkerk
630/795-3207

>>> <Ramanauskas.Peter@epamail.epa.gov> 08/01 9:34 AM >>>
Monte,

I forgot to mention that there is also Pyrene (as well as other constituent) Surface Water screening information in the PDF file found at the web address I sent you (if you haven't already noticed it).

Thx,
P

Peter Ramanauskas
04/30/2001 11:40 AM

To: mnienkerk, rstjohn
Subject: Millennium Attachment Tables

Gentlemen,

Thank you for the latest quarterly report and the Attachment tables to the Millennium VCA. I have a question on the tables. This is question is similar to the RFI Comment #4 I had sent you back in November 2000. Basically, I'd like to know what the rationale is for selection of the constituents in the tables. It seems that the organic chemical lists in TACO Appendix B, Tables A, B & E have been edited a bit in your tables (i.e., not the complete list). Also, I notice that you have included the ADL in the soils table. It is my understanding that this is not the same as the minimum detection limit that your analytical lab is capable of achieving. It is important to make sure that your analytical lab can achieve detection limits which will be below the Tier I screening levels so that confident decisions can be made on the data. A table that would show the screening levels and the lab detection levels would be helpful to show this.

Please let me know if you have any questions on this.

Thanks much!
Peter

Chicago Regional Office

3140 Finley Road
Downers Grove, IL 60515
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www.claytongrp.com

Federal Express No. 4196 2007 1824

October 27, 2000

Mr. Peter R. Ramanauskas
U.S. ENVIRONMENTAL PROTECTION AGENCY
77 West Jackson Blvd. (DW-8J)
Chicago, IL 60604-3590

Clayton Project 15-00116.01-003

RE: RFI Work Plan
ILD005078126
Millennium Petrochemicals, Inc.
Tuscola, Illinois

Dear Mr. Ramanauskas:

Enclosed you will find two (2) copies of the Work Plan for the RCRA Facility Investigation of the Millennium Petrochemicals, Inc. facility located in Tuscola, Illinois. The tentative schedule for when field-sampling activities will occur is as follows:

Monitoring Well Installation – November 1 through November 9, 2000.

Pond Sludge Sampling – November 13 through December 1, 2000.

Surface Water and Sediment Sampling – November 13 through December 1, 2000.

Groundwater Sampling – November 27 through December 8, 2000.

15-00116ca021.doc\MMN

We will notify you once we have scheduled specific sampling dates for the various sampling events. In the meantime should you have any questions, please contact me at 630/795-3208 or Monte Nienkerk at 630/795-3207.

Sincerely,

Monte Nienkerk

for **Ronald B. St. John, P.G.**
Vice President, Midwest Regional Director
Environmental Services

Enclosure: RFI Work Plan

cc: John Rice, Millennium Petrochemicals, Inc.
Tom Dimond, Mayer, Brown & Platt
Chris Bland, Equistar
Jeff Turner, Illinois EPA – Champaign

Phone Conversation Log - 10/26/2000

Ron St. John of Clayton Group Services, the contractor for the voluntary corrective action work ongoing at the Equistar Tuscola facility, called to provide me with an update on activities.

They have received 4 boxes of documents from Equistar and have been reviewing them. There remain information gaps with respect to the groundwater data from the wells installed around the landfills at the facility. Clayton has been in communication with Equistat and should be receiving the data within the next couple of days. The workplan will be sent out on Friday, October 27, 2000 as well as a list of documents compiled in preparation of corrective action activities (as per the agreement). This list will remain a "living" list as further information from FOIA requests submitted to USEPA & IEPA arrive.

Ron informed me that they will be driving wells around the WWTP lagoons during the week of October 30th.

I had asked about modifications to the workplan/sampling plan to address the additional info found in the RFA (Pit 11 and the drainage channels). Ron mentioned that Pit 11 has been closed in conjunction with the landfills. They have added sampling points in the workplan to investigate the drainage ways.

I thanked Ron for keeping me informed on the ongoing activities and he mentioned he will continue to do so as they receive more information and proceed with activities at the site.

Voluntary Corrective Action Face To Face Kickoff Meeting with Equistar/Millenium Chemicals, LP Contractors
October 11, 2000

On October 11, 2000 I met with representatives of Clayton Group Services, Inc., the contractor tasked to perform work required under the Voluntary Corrective Action (VCA) agreement with Equistar Chemicals and Millennium Petrochemicals. This meeting was intended to be a kickoff meeting which would clarify questions relating to deliverables, Environmental Indicators, site investigation, and other information related to the work done under the VCA.

Present at the meeting was USEPA representative Peter Ramanauskas and Clayton Group Services (CGS) representatives Ron St. John, Vice-President Midwest Regional Director; and Monte Nienkerk, Senior Project Manager.

The meeting began by reviewing what the initial investigative steps should be, namely, performing a file review to identify the current conditions at the site. This would help focus the investigation to the two areas currently under consideration (Landfills and WWTP Lagoons) as well as potentially identify other areas of concern that may be present at the site. CGS will be meeting at the Equistar facility on October 13, 2000 to gather information about the groundwater monitoring & well network present at the landfills and will begin gathering other site information at that time. CGS will submit the list of documents gathered in preparation of corrective action activities at the site as well as preparation of a brief current conditions report by the end of October in accordance with the VCA. This information should include past closure activities of units at the site done under Illinois EPA supervision.

I then presented CGS with an example of a Conceptual Site Model and suggested that they create something similar at the Equistar site. This would allow them to trace the sources of contamination through to contaminated media and potential receptors to better focus data gathering requirements for the RFI stage.

We then turned our attention to the Environmental Indicators and the draft report. I indicated that the draft Report should include not only the completed EI forms, but pertinent supporting information as well. References to supporting documents (such as the RFI) may be included. I mentioned that it would also be prudent to include progress on the EI determinations in the quarterly reports (January 15, April 15, July 15, October 15).

CGS explained their proposed investigation (still in draft stages) of the landfills and the WWTP Lagoons. CGS will collect more needed information on the groundwater monitoring situation at the landfills during their site visit on Oct. 13. As for the Lagoons, there will be 2 sediment (sludge) samples per settling lagoon at the WWTP area. Groundwater monitoring wells will be driven both upgradient of the WWTP and downgradient near the border of the Kaskaskia river. Surface water and sediment samples will be taken at the Kaskaskia river as well as an investigation of potentially impacted ecological areas. CGS will also perform a private well search in the area surrounding the plant. They are planning to have the workplan completed by the end of October so that fieldwork may begin in late October/early November. I will receive

copies of all documentation and the final copies of all documents will be placed in the public information repository which CGS will set up (most probably in the local Tuscola, Illinois library). I mentioned that CGS is to follow the RCRA Public Participation manual as noted in the VCA. I also provided CGS with handouts on EI Frequently Asked Questions & the EPA OSW Internet Resource page with links to various Corrective Action Guidance documents.

Ron St. John was identified as the MPI Project Manager as required by the VCA. It was agreed to meet as data from the site becomes available in order to evaluate the results, assess the situation, and agree on future steps. We will maintain free communication as the project progresses & I will be looking for the current conditions report to arrive in the near future.

Equistar/Millenium/Clayton Group Svcs Meeting 10/11/2000
VCA Kickoff Meeting

1) Get reminder of GW to Surf Water prioritization form.

2) 2 sludge samples per basin WWTP. wells. PNA/BTEX.

3) Get file room info on Equistar - send to copyservice if need.

4) Ron is MPI Project Manager.
5) Meet face-2-face as data becomes available.

Participants

Ron St. John - Clayton Group Svcs,
Monte Nienkerk - Clayton Group Svcs,
Peter Ramanauskas - USEPA

Peter Ramanauskas 10/11/2000 01:23 PM

To: mnienkerk, rstjohn
Subject: Additional QA Info

Gentlemen,

Here is an outline of additional information on subjects that should be carefully considered and emphasized in the written field investigation workplan. This will document the reasons for performing implemented field activities.

A. Objectives for the investigation:

- Rationale for target parameter list
- Rationale for field & fixed laboratory (confirmation) analyses
- Decision rules ("if/then" statement) to be applied to both field and fixed laboratory data. Use of "decision tree" may facilitate matters.
- Underlying rationale for decision rules & screening levels
- Discussion of ultimate data usage (tabular format is recommended)
- Relevance of any "historical" data. (Rule of thumb - if not relevant, or if "suspect", then eliminate)

B. Sampling procedures:

- To help ensure that field sampling activities go smoothly, prepare a "cook book" set of SOPs that can be handily implemented in the field. The SOPs should address both field analysis (e.g. use of XRF for metals in soil) and sample collection. This should include a formal chain of custody field program.
- Rationale for sampling network & frequency.
- Use low flow (i.e. 100 to 500 mL/min), non-peristaltic pump for sampling groundwater.
- Rationale for background soil & upgradient groundwater sampling locations.

C. Data Reporting:

- CLP-like data deliverables format for laboratory data.

D. Laboratory Analysis:

- Review the 1998 Region 5 Model QAPP QA Policy appendices, especially Appendices C, D, I and Q.
- For VOCs in soil - follow Appendix B
- Use "validated" methods.
- It is recommended to perform a performance audit of the fixed laboratory.
- Method QC and calibration procedures should be SW-846 "equivalent"
- Do compare the practical quantitation (or method reporting) limits of methods to screening/decision levels BEFORE selecting methods. If method reporting limits are too high, then it may be necessary to resample.
- If reporting hexavalent chrome in soils, rely on updated methods for alkaline sample digestion and analysis (i.e. SW-846 method 3060A).
- If project objectives cannot be met because of laboratory inadequacies, then resampling should take place.
- Appropriate laboratory corrective actions should be implemented and documented if QC criteria are not met.

Please let me know if you have any questions.

LETTER A

Date

[Addressee]

Dear *[Addressee]*:

As you are aware, on *[insert date sample collected]* we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Route 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND", then the laboratory did not detect the compound in the sample. The "reporting" limit column indicates the minimum level at which the laboratory is able to detect a particular compound. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

ug/L = micrograms per liter; this is equivalent to parts per billion.
mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals; Water, ICP/MS Metals, Mercury, Hardness, Anions and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board for groundwater that serves as a drinking water supply. The Douglas County Health Department can provide you with information concerning naturally occurring compounds found in groundwater.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc.; 3140 Finley Road; Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact EPA's Project Manager for the facility investigation, Peter Ramanauskas. He can be reached at USEPA – Region 5, 77 West Jackson Blvd. (DW-8J), Chicago, Illinois 60604-3590, or by telephone at 312-886-7890

Sincerely,

{Draft Subject to Revision (10/31/01)}
Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

cc: Peter Ramanauskas, USEPA

Enclosures: Analytical Results

LETTER B

Date

[Addressee]

Dear *[Addressee]*:

As you are aware, on *[insert date sample collected]* we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Rt. 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND", then the laboratory did not detect the compound in the sample. The "reporting limit" column indicates the minimum level that the laboratory is able to detect a particular compound. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

ug/L = micrograms per liter; this is equivalent to parts per billion.
mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals; Water, ICP/MS Metals, Mercury, Hardness, Anions and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board (IPCB) for groundwater that serves as a drinking water supply except for iron. Iron was found at a level of *[insert either 5,100 or 5,400 ug/L]*, which is slightly above the limit established by the IPCB of 5,000 ug/L. High levels of iron may cause rusty colored water or rust staining of laundry or bathroom

1996
Iron
Secondary
MCL
300ug/L

fixtures. Based on samples from other private wells and from other groundwater wells sampled in connection with the investigation of the Equistar site, we do not believe the elevated iron levels in the sample from your well was caused by operations at the site. If the slightly elevated level of iron is of concern, you may want to discuss this with the Douglas County Health Department.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc.; 3140 Finley Road; Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact USEPA's Project Manager for the facility investigation, Peter Ramanauskas. He can be reached at USEPA – Region 5, 77 West Jackson Blvd. (DW-8J), Chicago, Illinois 60604-3590, or by telephone at 312-886-7890

Sincerely,

{Draft Subject to Revision (10/31/01)}

Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

cc: Peter Ramanauskas, USEPA

Enclosures: Analytical Results

LETTER C

Date

[Addressee]

Dear *[Addressee]*:

As you are aware, on *[insert date sample collected]* we collected a water sample from a water supply well on your property. The purpose of this sampling is to develop regional groundwater quality data to support an ongoing environmental investigation of the Equistar site located on Rt. 36 in Tuscola. The laboratory analytical results for this sample are enclosed. Following is an explanation of the results:

The column on the left lists the compounds that were analyzed, which are grouped by the test method used to analyze the compound. The next column to the right is the result column and provides the concentration level of the compound detected in the sample. If that column has an "ND", then the laboratory did not detect the compound in the sample. The "reporting limit" column indicates the minimum level at which the laboratory is able to detect a particular compound. The "unit" column represents the unit of measure for both the Result and the Reporting Limit columns and uses the following abbreviations:

ug/L = micrograms per liter; this is equivalent to parts per billion.
mg/L = milligrams per liter; this is equivalent to parts per million.

A review of the results for the sample collected from your well reveals that no volatile organic compounds (grouped under the heading GC/MS Volatiles) were detected. Some inorganic compounds are naturally present in most groundwater and are grouped in the report under the headings Sulfide, Cyanide, Total Dissolved Solids, Total Suspended Solids, Chemical Oxygen Demand, Ammonia, ICP Metals; Water, ICP/MS Metals, Mercury, Hardness, Anions and SM2320 B. The inorganic compounds detected are all within either expected ranges for natural occurrence in groundwater or acceptable limits established by the Illinois Pollution Control Board (IPCB) for groundwater that serves as a drinking water supply except for lead. Lead was found at a level of *[insert either 8.7 or 13 ug/L]*, which is above the limit established by the IPCB of 7.5 ug/L. Lead is commonly associated with the plumbing in older homes. Some old homes have lead

Lead action level = 15 ug/L → Based on EPA's Summer 2000 DW Stds and Health Advisories Lead Action Level - Def?

pipes or connections. It is also found in the solder used with copper plumbing of many homes. We do not believe that the lead is associated with the groundwater as the lead levels detected in all the other private water well samples (except one) and all of the deep monitoring wells installed around the Equistar site are below the limit established by the IPCB. If the lead found in the water sample from your well is of concern, you may want to discuss this with the Douglas County Health Department.

Please feel free to contact me with any questions regarding the analytical results at Clayton Group Services, Inc.; 3140 Finley Road; Downers Grove, Illinois 60515, or toll free at 888-369-0200. You may also contact EPA's Project Manager for the facility investigation, Peter Ramanauskas. He can be reached at USEPA – Region 5, 77 West Jackson Blvd. (DW-8J), Chicago, Illinois 60604-3590, or by telephone at 312-886-7890

Sincerely,

{Draft Subject to Revision (10/31/01)}

Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

cc: Peter Ramanauska, USEPA

Enclosures: Analytical Results

General Comments on the RFI Work Plan/Field Sampling Plan/QAPP
for Millennium Petrochemicals, Inc.
Tuscola, Illinois
ILD 005 078 126

Comment 1:

Work plan Section 2.3.4. notes that there are a few private wells near the facility in the deep aquifer. Are there plans to sample these private wells? If so, include this information in the RFI Work Plan.

Comment 2:

Work plan Section 3.1 notes the existence of three wells installed at depths of 31 to 32 feet bgs (OW-5, OW-7, and OW-8). These wells are not shown on Figure 2. Where are these wells located, are they screened in what is considered the "intermediate" depth, and how will these wells be used to aid in the investigation of the site? Was any sampling of these wells done as a result of the 1981 RCRA Monitoring Plan and, if so, what were the results? Furthermore, the numbering of the WWTP lagoons shown on Figure 2 does not make sense (i.e., there are two instances of ponds 1 & 2 and 7 & 8.

Comment 3:

It is stated in Section 4.3.3. and elsewhere throughout the document that the existing landfill wells will not be sampled for contaminants under this RFI. Please expand on the rationale for this. If data collected under IEPA groundwater monitoring requirements will be used, this should be stated. It should be shown how this will be sufficient to determine the extent of contamination in the groundwater stemming from the landfills if that is indeed the intent here.

Comment 4:

Referring to Tables 1 and 3, it should be shown that the Quantitation Limits are low enough to meet IEPA's TACO Tier 1 levels for risk screening purposes (if that is what you will chose to use). The tables should be modified to compare the laboratory reporting limits to the risk screening levels chosen for the project. Explanation of the rationale for including the constituents listed in the tables should be provided in the work plan (versus selection of complete 40 CFR Part 264 Appendix IX parameters).

Comment 5:

The project objectives noted in Section 4.1 should include mention of acquiring data of sufficient quality and quantity for use in risk screening and risk assessment.

Comment 6:

In Section 5.2 of the FSP, will there be any intermediate wells sampled? If so, there should be codes included. If not, the rationale for not sampling intermediate groundwater zones should be noted in the document.

Comment 7:

Referring to Sections 6.6.2 & 6.9.2. of the FSP, please note that the SOP present in Attachment B-7 states that criteria for well stabilization is 3 consecutive readings within the limits shown.

Comment 8:

Referring to Section 6.10.4., please note the rationale for sampling dry ponds to a depth of 8 inches below the surface.

Comment 9:

Referring to QAPP sections 9.0 and 12.0, there is almost no information on laboratory data reduction, validation, and reporting or laboratory corrective action. This should be included in these sections.

Equistar-Tuscola EI Report Review

Q: Table 3 shows RFI SW/GW Compound Analyte List while Table 18 shows GW TACO screening levels,
Table 3 = Broken out by ~~Area~~ VOC/SVOC
Table 18 = Mix of organics.

~~Check~~ Check Appendix H - ~~Analytical~~ Summary Tables for what they actually detected,
~~Vs Table~~
Did they ~~sample~~ analyze for all constituents listed in Table 3 and only compare to Table 18?

CA 725 → Check Allen's old data review notes. Check new (last round) analytical QA/QC Appendix I

Complete Pathways: GW for Residents (Off-Site) & Food,
Sediment for Workers/Trespassers/Recreation
No → Surface Water → No exceedances of HH.
← WWTP Sludge → Workers/Trespassers.

Pond Sludge/GW migration.
~~Current~~ data used for 750
~~Final~~ CM is needed to address migration potential? Check vs. Mig to GW Risk #'s probably exceed!

Need to check: 1 - Rationale for including/excluding all pathways,
2 - All sampling data ~~re~~ salts vs. screening levels,
↳ validation

CA 750 - GW is contaminated w/ VOCs/metals

Need to check: ① GW Data levels/~~validation~~ 11/16/01/screening.
② No migration rationale.

Equistar EI Determination Review 11/10/01

① See Allen's Previous Review comments on Draft EI data.

② New problems indentified in Appendix I (new data/new samples) were limited to Groundwater Samples from:
- MW04S
- MWF02S / MW02S / MW02D
- MWF05S
- MW03S

③ Where is data for July '01 Sediment Samples?
- Kaskaskia River Sediment (SS04)
- Outlet Channel? (SS06)

④ Question: Tables 1 & 3 list RFI Analytical Suites for Soil/Sludge/SW/GW. However, the tables in Appendix H do not show results for all constituents listed in Tables 1+3. Explain.

⑤ Any PID elevated hits in soil sampling noted as done on pg 2-> Sec 2.3.2.

Numerical Data Review (Results)

* Note: In Claytons comparison of sludges to screening levels, they do not note exceeding Mig to GW #'s. This is OK for EI determination as there is GW data available, but ~~for~~ may have potential future impacts. Need to check which constituents might exceed these values (either me or Clayton).

→

Pond Sludges

Exceed for 4 VOCs (Benzene, Ethylbenzene, TCE, Toluene) according to Table 15A. According to Section 4.1 on pg 4-2, "Concentration results were compared to most stringent ingestion and inhalation values in Table 16." Yet ~~for example,~~ Table 15A is in ppb while screening levels in ppm.

* Ask if Clayton compared / included migration to GW in the screen. (eg) Methylene Chloride exceeds mig to GW screen.

~~[illegible]~~

Yet, for example, for chloroform, the maximum detected conc. was 0.34 ppm in the high ponds and most conserv. screening value is 0.3 ppm, yet not noted as COC on Table 15A.

---

6 SVOCs detected over screening values.
3 Metals " " "

Equistar EI Determination Review 11/16/01

Surface Water / Sediments - Kaskaskia River

3 VOCs / 8 SVOCs detected in surface water. 302.208
Surface Water Screening Values Table 19 - Inorg from ~~Table~~ Organics IEPA Water Bureau

* How do these relate to MCLs? Higher → non drinking

~~Only~~ Nothing exceeds human health screening #'s.
Only 2 SVOCs over eco values,
Copper is over eco value at 2 locations,
Eco should be considered in future, but not needed for EI.

* Appendix G → Kaskaskia River downstream of US 36 is not classified as a biologically significant streams. Upstream of US 36 it is biologically significant.
Again → for EI's this is not critical but will need to consider for eco future.

→ 35 IAC 302 Subpart B

River Sediment → (5 river sediment samples and one from inlet and outlet channel.)

→ VOCs; 17 SVOCs detected.

2 VOCs (acetone + ethylbenzene) above Eco screen.; SVOCs above eco

Metals → As Cd, Cr Co, Ni, Zn → COCs
over HH/screen Table 16 - Clayton does not note this. →
As is also over Res ingestion Table 16. 0.94 vs 0.1 screen.

Section 302.203 Offensive Conditions

Waters of the State shall be free from sludge or bottom deposits, floating debris, visible oil, odor, plant or algal growth, color or turbidity of other than natural origin. The allowed mixing provisions of Section 302.102 shall not be used to comply with the provisions of this Section.

(Source: Amended at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.204 pH

pH(STORET number 00400) shall be within the range of 6.5 to 9.0 except for natural causes.

Section 302.205 Phosphorus

Phosphorus (STORET number 00665): After December 31, 1983, Phosphorus as P shall not exceed 0.05 mg/l in any reservoir or lake with a surface area of 8.1 hectares (20 acres) or more, or in any stream at the point where it enters any such reservoir or lake. For the purposes of this Section, the term "reservoir or lake" shall not include low level pools constructed in free flowing streams or any body of water which is an integral part of an operation which includes the application of sludge on land. Point source discharges which comply with Section 304.123 shall be in compliance with this Section for purposes of application of Section 304.105.

(Source: Amended at 3 Ill. Reg., no. 20, page 95, effective May 17, 1979.)

Section 302.206 Dissolved Oxygen

Dissolved oxygen (STORET number 00300) shall not be less than 6.0 mg/l during at least 16 hours of any 24 hour period, nor less than 5.0 mg/l at any time.

Section 302.207 Radioactivity

a) Gross beta (STORET number 03501) concentration shall not exceed 100 picocuries per liter (pCi/1).

b) Concentrations of radium 226 (STORET number 09501) and strontium 90 (STORET number 13501) shall not exceed 1 and 2 picocuries per liter respectively.

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.208 Numeric Standards for Chemical Constituents

a) The acute standard (AS) for the chemical constituents listed in subsection (e) shall not be exceeded at any time except as provided in subsection (d).

b) The chronic standard (CS) for the chemical constituents listed in subsection (e) shall not be exceeded by the arithmetic average of at least four consecutive samples collected over any period of at least four days, except as provided in subsection (d). The samples used to demonstrate compliance or lack of compliance with a CS must be collected in a manner which assures an average representative of the sampling period.

c) The human health standard (HHS) for the chemical constituents listed in subsection (f) shall not be exceeded when the stream flow is at or above the harmonic mean flow pursuant to Section 302.658 nor shall an annual average, based on at least eight samples, collected in a manner representative of the sampling period, exceed the HHS except as provided in subsection (d).

d) In waters where mixing is allowed pursuant to Section 302.102, the following apply:

    1) The AS shall not be exceeded in any waters except for those waters for which the Agency has approved a ZID pursuant to Section 302.102.

    2) The CS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102.

    3) The HHS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102.

e) Numeric Water Quality Standards for the Protection of Aquatic Organisms

Constituent	Storet Number	AS (ug/L)	CS (ug/L)
Arsenic (total)	01002	360	190
Cadmium (total)	01027	exp[A+Bln(H)], but not to exceed 50 ug/L, where A=-2.918 and B=1.128	exp[A+Bln(H)] where A=-3.490 and B=0.7852
Chromium (total hexavalent)	01032	16	11
Chromium (total trivalent)	01033	exp[A+Bln(H)] where A=3.688 and B=0.8190	exp[A+Bln(H)] where A=1.561 and B=0.8190
Copper (total)	01042	exp[A+Bln(H)] where A=-1.464 and B=0.9422	exp[A+Bln(H)] where A=-1.465 and B=0.8545
Cyanide	00718	22	5.2
Lead (total)	01051	exp[A+Bln(H)] where A=-1.301 and B=1.273	exp[A+Bln(H)], where A=-2.863 and B=1.273
Mercury	71900	2.6	1.3
TRC	500600	19	11

where: ug/L = microgram per liter,

exp[x] = base neutral logarithms raised to the x- power, and

ln(H) = natural logarithm of Hardness (STORET 00900).

f) Numeric Water Quality Standard for the Protection of Human Health

Constituent	STORET Number	(ug/L)
Mercury	71900	0.012

where ug/L = micrograms per liter

g) Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102.

Constituent	Unit	STORET Number	Standard
Barium (total)	mg/L	01007	5.0
Boron (total)	mg/L	01022	1.0
Chloride (total)	mg/L	00940	500.
Fluoride	mg/L	00951	1.4
Iron (dissolved)	mg/L	01046	1.0
Manganese (total)	mg/L	01055	1.0
Nickel (total)	mg/L	01067	1.0
Phenols	mg/L	32730	0.1
Selenium (total)	mg/L	01147	1.0
Silver (total)	ug/L	01077	5.0
Sulfate	mg/L	00945	500.
Total Dissolved Solids	mg/L	70300	1000.
Zinc (total)	mg/L	01092	1.0

where: mg/L = milligram per liter and
ug/L = microgram per liter

(Source: Amended at 20 Ill. Reg.7682, effective May 24, 1996)

Section 302.209 Fecal Coliform

a) During the months May through October, based on a minimum of five samples taken over not more than a 30 day period, fecal coliform (STORET number 31616) shall not exceed a geometric mean of 200 per 100 ml, nor shall more than 10% of the samples during any 30 day period exceed 400 per 100 ml in protected waters. Protected waters are defined as waters which, due to natural characteristics, aesthetic value or environmental significance are deserving of protection from pathogenic organisms. Protected waters will meet one or both of the following conditions:

1) presently support or have the physical characteristics to support primary contact;

2 flow through or adjacent to parks or residential areas.

b) Waters unsuited to support primary contact uses because of physical, hydrologic or geographic configuration and are located in areas unlikely to be frequented by the public on a routine basis as determined by the Agency at 35 Ill. Adm. Code 309.Subpart A, are exempt from this standard.

c) The Agency shall apply this rule pursuant to 35 Ill. Adm. Code 304.121.

(Source: Amended at 12 Ill. Reg. 12082, effective July 11, 1988)

Section 302.210 Other Toxic Substances

Waters of the State shall be free from any substances or combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life. Individual chemical substances or parameters for which numeric standards are specified in this Subpart are not subject to this Section.

a) Any substance or combination of substances shall be deemed to be toxic or harmful to aquatic life if present in concentrations that exceed the following:

1) An Acute Aquatic Toxicity Criterion (AATC) validly derived and correctly applied pursuant to procedures set forth in Sections 302.612 through 302.618 or in Section 302.621; or

2) A Chronic Aquatic Toxicity Criterion (CATC) validly derived and correctly applied pursuant to procedures set forth in Sections 302.627 or 302.630.

b) Any substance or combination of substances shall be deemed to be toxic or harmful to wild or domestic animal life if present in concentrations that exceed any Wild and Domestic Animal Protection Criterion (WDAPC) validly derived and correctly applied pursuant to Section 302.633.

c) Any substance or combination of substances shall be deemed to be toxic or harmful to human health if present in concentrations that exceed criteria, validly derived and correctly applied, based on either of the following:

1) Disease or functional impairment due to a physiological mechanism for which there is a threshold dose below which no damage occurs

~~Ex~~ Clayton Q's

5

Pg. 3-1 – ~~S~~ Closed ponds never ~~confirming~~ confirmed sampled? what was fill material?

Midde Aquifer (MW 01D → Not screened in it
MW 02D
~~MW~~
G300 → screened in it
G306 considered part of deep aquifer

MW 15, 65, 75 are in interglacial (middle) but noted as shallow

$$Q = \left(1.03 \times 10^{-3}\,cm/s\right) \frac{\Delta h}{\Delta L} (Area)$$

$$= \left(1.03 \times 10^{-3}\,cm/s\right) \left(\frac{5\,ft}{750\,ft}\right) =$$

$$Speed = 6.86 \times 10^{-6}\,cm/s \left(\frac{1\,mile}{1.61 \times 10^5\,cm}\right)\left(\frac{3600\,s}{1\,hr}\right) = 1.53 \times 10^{-7}\,mi/hr$$

$$6.86 \times 10^{-6}\,cm/s \left(\frac{3600\,s}{1\,hr}\right)\left(\frac{24\,hr}{1\,d}\right) = 0.59\,cm/d$$

Clayton should include rationale for sampling certain wells near facility but not others, (e.g. sampled 19, 21, M, N, but not 18, 8, 11, C, etc)

(1) Ernie → (703)-308-8608

(2) Bob Lanier — NASA Plumbrook

↳ will attend → if travel approved.

Compliance Monitoring
Landfill Wells

G102 - Acetone hit 1999 - looks anomalous as there are no other detections.

G111 - Bis(2-ethylhex)ph - 2001 - looks anomalous too

2001 metals (1994 to 2001 data Quarterly)

G101 → 5 Barium, Boron, Cr, Copper, Iron, Lead, Mn, Ni; - below Class 2 GW

G102 → No metals over Class 2

G103 → Iron high 34 ppm 2001 (Class 2 Std = 5 ppm)

G105 → Sulfate high (3 ppm 2001) Class 2 Std = 0.4 ppm

G106 → Sulfate = 1.7 ppm 2001 Class 2 Std > 0.4 ppm

G107 → No metals over Class 2

G108 → Iron = 15 ppm; Sulfate = 3.8 ppm

G109 → Sulfate = 2.2 ppm

G110 → Sulfate = 2.8 ppm

G111 → No metals

G112 → Boron 2.6 ppm (Std = 2.0); Iron = 7.8 ppm

Lead = 0.11 ppm in 1999 → Non detect in 2001
Std = 0.1

G113/A113 → Boron 14 ppm; Sulfate = 3.4 ppm

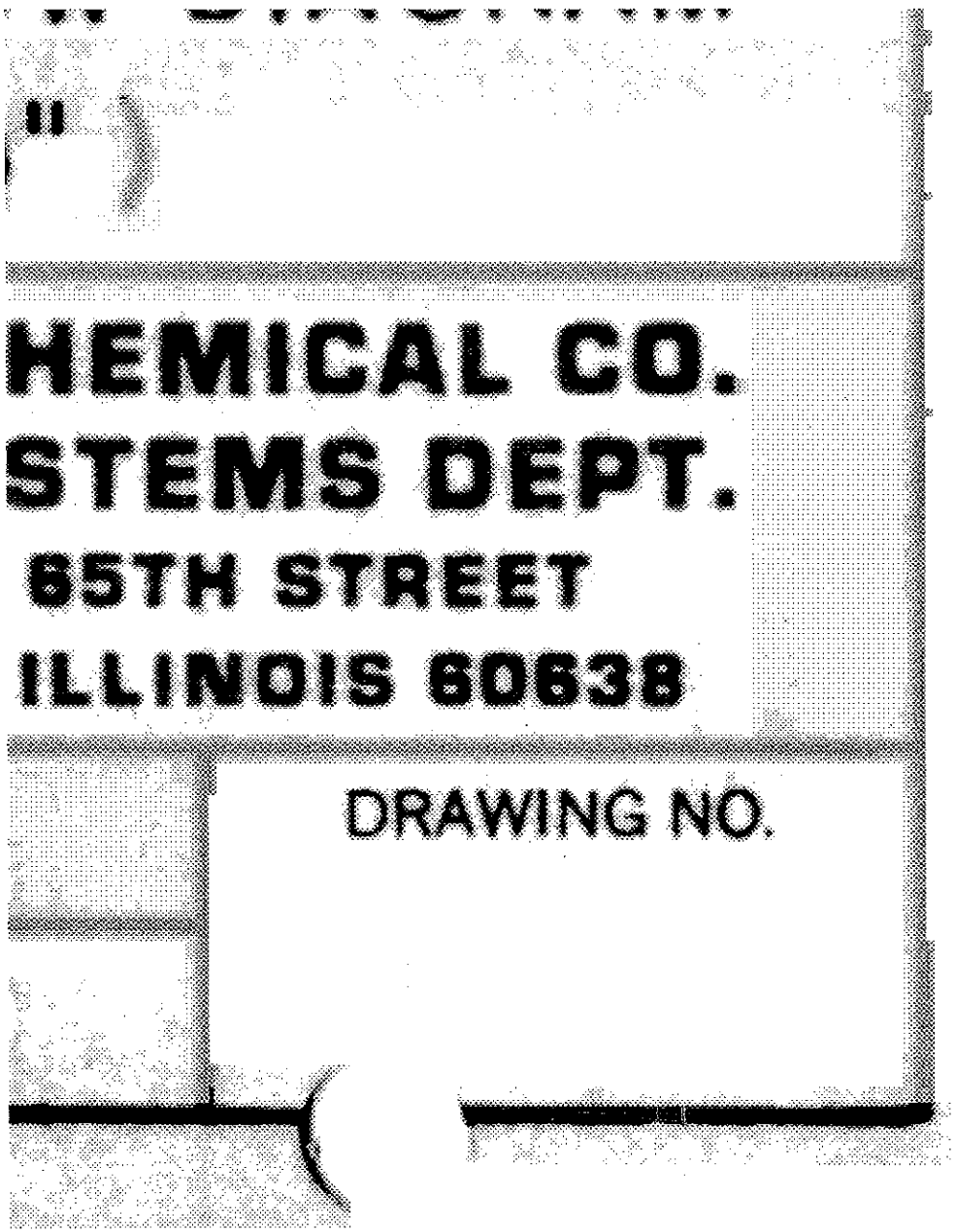
G114 → Sulfate = 0.45 ppm

G115 → Sulfate = 0.65 ppm

G116 → No metals

G117 → No metals

G118 → Boron = 2.1 ppm


HEMICAL CO.
STEMS DEPT.
65TH STREET
ILLINOIS 60638
DRAWING NO.

Assessment Monitoring wells _ Landfills

No VOCs in wells

Leachate wells have some hits:

1,1,1,-Trichloroethane → 20ppb in L3
18ppb in L7
6.9ppb in L3

1,2,4-Trimethylbenzene → 6ppb in L3
14ppb in L4
2.2ppb in L5

1,3,5-Trimethyl benzene

~~checking as needed~~

Inorganics (2000 data) 2 qtrs April '2000 is last
↳ What about latest results?

G200 - Boron 2.2ppm
G201 → Bo 2.6 + 2.3 ppm
G209 → Boron 2.2ppm

G300 → Boron 2.4ppm
G306 → Boron 2.6ppm
G309 → Boron 2.6/2.5ppm

Leachate wells

L3 → Boron = 0.84ppm
L4 → Boron = 2.2ppm

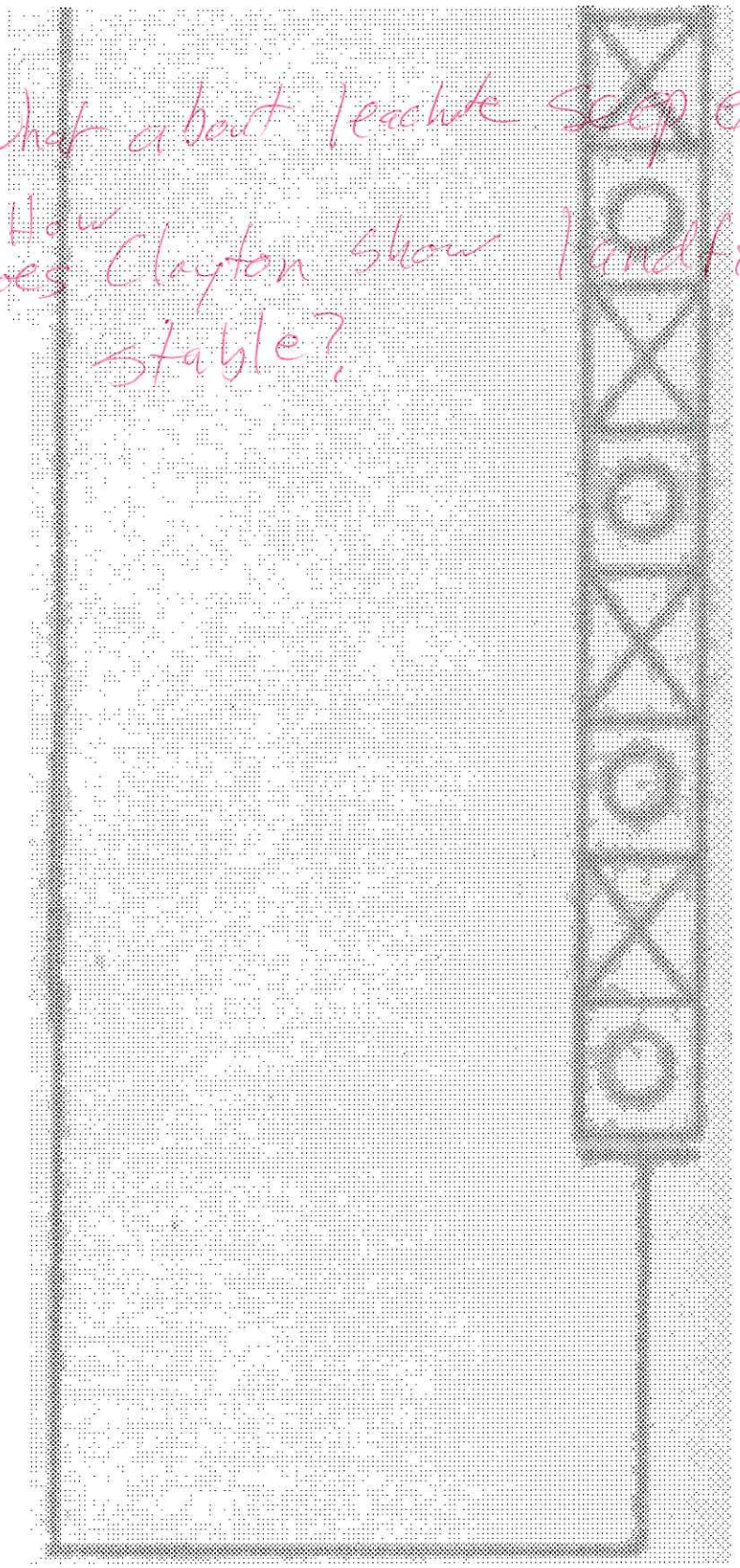
what about
? L5, L6, L7?

Leachate wells

L4 As = 320ppb (200ppb std)
L4 Cd = 240ppb (50ppb std)
L4 Cr = 2000ppb (600ppb)
L3/L4 Fe = (360ppm + 680ppm / 5ppm std)

L4 Mn = 49ppm std = 10ppm
L3 Mn = [illegible] ppm

L3/L4 Sulfate = 4.3ppm / 6.5ppm / 0.4 std



- What about leachate seep exposure?
- How Does Clayton show landfill plume is stable?

Equistar/Millennium CA725 EI Determination

Equistar/Millennium has performed and RFI investigation of SWMUs/AOIs identified in a 1988 RFA performed by the Agency.

Most of the units were closed under IEPA supervised work. However, for the purposes of corrective action completion and EI determination, Equistar entered into a Voluntary Corrective Action agreement to address remaining EPA concerns. The remaining areas of interest included: WWTP aeration lagoons/sludges, closed and capped landfill groundwater plume, intermittent stream sediment, and Kaskaskia river surface water and sediment quality.

In completing the CA725 determination form using the data obtained from the RFI investigation, the following conditions exist:

- Contaminated media include: groundwater, sediment, and WWTP pond sludges are contaminated above human health risk levels for certain constituents.

- Complete pathways for:

  1) Groundwater: off-site residents and the indirect food pathway. Residents might use the private-wells for raising crops. There is no on-site groundwater use;

  2) Sediment: minor potential for worker exposure to river & intermittent stream sediment, trespassers, recreation; and

  3) WWTP Pond Sludge: since contaminated sludges are at the bottom of the ponds, there should be no complete exposure pathway unless the ponds are dredged by workers (which apparently has never been done).

- Contaminant levels:

  1) Groundwater: closed landfill plume has not migrated far enough to adversely affect any private wells. Residential private well sampling does not show organic contamination. Two wells were flagged for Iron levels at 5100 ppb and 5400 ppb which is above the Illinois Pollution Control Board Level of 5000 ppb and is a secondary contact concern. Lead was elevated at two wells at 8.7 ppb and 13 ppb. This is above the TACO Class I GW and Illinois Pollution Control Board level of 7.5 ppb. As is elevated across the board. (New MCL)

  2) River Sediments: 3 metals exceed HH screening levels:

  a) Arsenic at maximum downstream of 22 ppm (R5 Res Ingestion = 0.4ppm; IEPA TACO Res/Commercial/Industrial Ingestion = 11.3 ppm). All samples have positive results. 2 upstream samples at 9.4 ppm and 2.8 ppm. State background.

  b) Beryllium at maximum downstream of 0.94 ppm (R5 & TACO Ingestion = 0.1

Check As on deep on-site wells.

ppm). All samples have positive results. 2 upstream samples at 0.58 ppm and 0.32 ppm.

c) Total Chromium at maximum downstream of 330 ppm (R5 Inhalation = 270 ppm; TACO Ingestion = 230 ppm; TACO Inhalation = 270 ppm). All samples have positive results. 2 upstream samples at 5.7 and 5.5 ppm.

3) Intermittent stream sediments: 2 metals exceed HH screening levels:

a) Arsenic at maximum of 14 ppm near facility exit. Other 2 downstream samples at 9.5 ppm and 0.64 ppm.

b) Beryllium at maximum of 0.89 ppm near facility exit. Other 2 downstream samples at 0.73 ppm and 0.66 ppm.

4) WWTP Lagoon Sludges: Various metals, organics above HH Screening levels, but I don't believe there are any complete pathways at this area. Of note is the presence of As, Be, and Cr above screening levels in the pond sludge as well.

A CA725 determination seems possible here. The only constituents of